Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

May, 2001

SCAMIT Newsletter

Vol. 20, No. 1

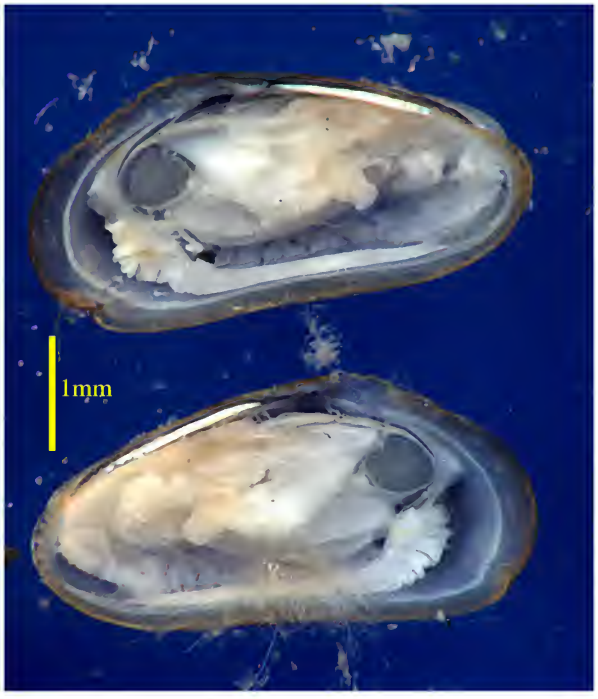
SUBJECT: There is no meeting in July

GUEST SPEAKER:

DATE:

TIME:

LOCATION:



Mytilus sp. (juv)
ITP Regional 2708(2), 17 July 00, 37 ft.
Image by K. Barwick, 27 Feb 01

NEW LITERATURE

The activities of polychaetes are often viewed in the context of bioturbation, with examination of their burrow morphology and feeding activities demonstrating movement of materials from subsurface to surface layers. They can also alter the benthic environment in the opposite sense, causing the precipitation of particles which would otherwise drift by on bottom currents. Friedrichs et al (2000) described the effects of polychaete tube 'lawns' on bottom particle movement. The tube lawns, by the nature of their spacing, the length of tube protrusion above the sediments, and the individual tube diameter and flexibility, effectively raise the bottom (as far as the current is concerned) to the level of the tube tips. This leaves the area beneath this skimming flow subject to particle accretion from the lower edge of the current as marginal particles drop below the region of active lateral transport, stabilizing the sediments, and adding

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finer (often nutrient rich) particles to the sediment surface. Even at relatively low polychaete tube densities this effect can occur, helping to direct subsequent community evolution within the affected area through modification of the benthic environment.

So the question sometimes asked of polychaetologists 'What good are they?' can be answered by something other than just 'Fish eat'em'. It is not clear that an equivalent variety of good uses can be attributed to peracarid crustaceans, although fish eat them as well. Takahashi et al (1999) verify this in an investigation of the feeding habits of surf zone fishes in Japan. The majority of the 25 species of fishes examined ate a variety of different surf-zone peracarid prey, some of which were important to their overall nutrition. Most of the prey species were taken in low abundance by fish predators and did not constitute a significant portion of their diet. Nearly all of this predation took place either during swimming events initiated by the prey, or during resuspension of the prey by water motion. These two risk windows lead to 1) prevalence of nocturnal swimming excursions by peracarids to minimize risk of predation by visual predators, and 2) selection for rapid reburial mechanisms in peracarid species likely to suffer dislocation by water motion in shallow-subtidal habitats.

While peracarids are clearly prey to fishes, they are predators to other small organisms. Gudmundsson et al (2000) document the consumption of foraminifers by three species of asellote isopods. They found a close correspondence between the structure of the mandibular molar and the nature of the selectively ingested prey items. Species with relatively strong tests were selected by an isopod possessing a rounded molar which could focus bite pressure on a single point of the test and lead to cracking. Two other species had more flattened molar cusps and chose to consume more fragile tested species. It appears that such small asellote isopods may specialize in particular species or genera of forams, which form a significant portion of their diet. The considered isopods were from bathyal depths, and it may be that the heavier shells of foramiferans from shallower shelf depths are a sufficient defense against such predatory attacks.

In an attempt to elucidate the phylogeny of forcipulate asteroids Mah (2000) analyzed 25 characters of 25 taxa, using *Henricia* as an outgroup. His analysis suggested that this clade was rife with homoplasy, and that most of the morphologically defined traditional groups were probably not monophyletic. This confirmed rather than modified other recent analyses, and indicated that further analysis with a broader sampling of taxa needs to be undertaken. Characters used in the analysis also require evaluation for potential usefulness in subsequent analyses. Resolution of the relationships of family and other groups within the forcipulates remains out of reach for the moment.

The methodology of phylogenetic analyses continues to evolve. Takahashi & Nei (2000) provide a consideration of the relative efficiencies of several different search algorithms using large numbers of "taxa". They show that there are patterns associated with each algorithm. While this article is not for the uninitiated, it is helpful for even extreme novice cladistic folk, such as your editor, to see the consequences of adopting the compared algorithms. The authors compare maximum parsimony, maximum evolution, and maximum likelihood methods of generating tree topologies. Efficiency is a most desirable criterion for judging the utility of each approach. As the number of entities considered increases into the hundreds (for instance in the cladistic analysis of the B'98 trawl dataset) computation time increases astronomically. Use of an optimization algorithm has the possibility of actually allowing completion of

the analysis before the end of the universe, or perhaps even before the death of the analyst. With larger datasets, efficiency becomes not just useful, but necessary.

Well, there is good news and bad news contained in a recent article by Armonies (2000) on the scale of changes in benthic communities. The good news is that the adoption of large-scale monitoring seems just the thing the author would recommend based on his studies. The bad news is that on the kilometer scale, changes in benthic populations between successive samplings at the same site over short intervals, can be profound. To some extent his results stem from a shallow study area (8-11m depth) exposed to more current movement than most of our Bight stations. We do sample in water this shallow, however, and need to seriously consider the impact of his findings on our own sampling. Of central importance to the magnitude of observed change is the ability of many benthic organisms to current drift in one or several of their life stages. There are also effects derived from physical factors rather than biological activities.

The Editor witnessed first hand the modifications in benthic community structure caused by a three day episode of large swell in about 5 m of water in Santa Monica Bay. Analysis of samples taken a day before and 3 days after this episode showed about a 50% change in species composition of the samples, and even larger changes in individual population abundances.

Armonies examined current data during the periods he considered, and also noted storm effects. During one two-week period of only moderate current action he found that in roughly half the populations, change over the period equaled average variation between consecutive years! The combination of these biotic and abiotic factors severely reduce the ability to predict community composition over small scales, only on regional scales can the small scale variation average out. Armonies recommends use of random station selection over a large area to circumvent the influence of short-term small scale variability; exactly the approach taken in our current regional monitoring.

The degradation in the linearity of the Benthic Response Index in shallow water may be, at least in part, a reflection of the above noted variability. Perhaps, even with a better definition of a shallow polluted end-point, we will not be able to achieve the same Index performance in the dynamic shallow habitat examined, as has been achieved at greater depths on the shelf.

MINUTES OF THE 14 MAY MEETING

The meeting was held at the Invertebrate Laboratory of the Santa Barbara Museum of Natural History. Both Paul Scott and Gene Coan were there to discuss our comments and answer our questions on their bivalve monograph (Coan, Valentich Scott & Bernard 2000). After a brief business meeting we proceeded to address a series of issues raised by Kelvin Barwick (CSDMWWD), Don Cadien (CSDLAC), and Carol Paquette (MBC). As in past considerations of published works (such as the volumes of the Taxonomic Atlas series) we attempted to provide feedback to the authors on errors we had detected in their publication so corrections could be made in future editions, or errata issued for the current one. Paul and Gene were way ahead of us, however, and had already compiled a much more extensive list than that offered by the participants. This list is being made available on-line as a reference at

http://www.sbnature.org/htmls/inverts.htm

The authors would rather not put it out in a fixed form in the Newsletter, since it is an active document, and new additions are being made. The on-line form is, by definition, the current one. A printing of the list as an attachment to the Newsletter would rapidly be

out of date, leading to confusion. Those hard copy readers who desire list access but do not have internet access should be able to print out a copy for themselves at a local library, the majority of which have computers and internet access available to their patrons. Nearly all of the corrections are not very substantive, mostly dealing with misspellings, orthographic problems, etc. Gene and Paul plan to deal with more substantial changes and additions in a second list which will be made available in the future. All the changes presented in either list will be incorporated into a second edition of the book.

Several of our questions had to do with specific taxa, and required examination of specimens. One of the more difficult problem areas was with *Tellina cadieni*, whose original description in the book was at variance with the perception of it as equivalent to *Tellina* sp A of SCAMIT. Specimens of this animal from a variety of different sources were examined, as were specimens of *Tellina carpenteri*. We found that the apparent basis of the confusion was the idea of equivalence between *T. cadieni* and *T.* sp A. The editor, and several others present had assumed that they had been correctly allocating names to forms, when, in reality, they had not. The deep-water, sculptured, yellow-orangish pink form, originally treated as *T.* sp A of SCAMIT and differentiated from the broadly distributed (but generally shallower) smooth, uniform pink form for which the name *T. carpenteri* was being used, appeared to have the wrong names in SCAMIT list usage. Based on the authors' research, the deepwater, sculptured, yellow-orangish pink form is actually *T. carpenteri*. *Tellina* sp A then becomes a synonym of that species rather than *T. cadieni* which is a larger, shallow-water/ embayment/harbor form that differs in hinge particulars, color pattern and sculpture from *T.* sp A. The smooth uniform pink form which had been treated as *T. carpenteri* by SCAMIT remains unaccounted for and is here referred to a second provisional species *Tellina* sp B of SCAMIT. So this form, the most abundant and most widely distributed of the three types, confused under the *T. carpenteri* umbrella locally, remains unnamed as far as we can tell. It may be that somewhere in the extensive synonymy of *T. carpenteri* there remains an available name that might be applied to this species, but that has not yet been confirmed. We examined paratypes of *T. cadieni* (from Alamitos Bay), and examples of *T.* sp A SCAMIT from 305m depths off Palos Verdes side by side, and found only a few differences. Most prominent among these was the nature of the posterior lateral tooth, which extends in *T. cadieni* into a thornlike protuberance distally (this is visible in Plate 83 of the book) which is much better defined than the less prominent and more rounded distal protuberance in *T. carpenteri*. New voucher sheets for all three taxa are in preparation and will be distributed in a later Newsletter.

Our attention switched to mytilids, with Carol Paquette (MBC) inquiring about separation of members of the *Mytilus edulis* group by external morphological characters. Based on recent literature Don Cadien suggested this was a fairly fruitless task, and we tabled the issue again. Still within the mytilids Kelvin Barwick raised the issue of separation of juvenile *Crenella decussata* from juvenile *Solamen columbianum*. We examined specimens of equivalent size and found that the two should be easily separable based on the number of ribs (more in *Solamen*) the degree of rib divarication (more in *Crenella*), the degree of granulation of the ribs (more in *Crenella*), the shape (rounder in *Crenella*, more obliquely oval in *Solamen*), and the thickness of the shell (thinner in *Solamen*).

Carol then brought out a specimen which she had tentatively identified as *Solamen megas*. This was confirmed by Gene and Paul. This is a southern species only uncommonly taken in our area. The specimen under consideration was from Long Beach Harbor, and Carol was a bit concerned that it might be a species introduced from elsewhere. The two species

(*S. megas* and *S. columbianum*) are similar in overall appearance, but *S. megas* has a different valve profile, being more inflated under the umbos and less inflated elsewhere in the valve than *S. columbianum*. This difference is hard to see in Plate 26 of Coan et al (2000), but is evident when the two species are compared side by side.

We also spent considerable time examining small specimens of *Solen*, attempting to determine at what size we could begin to accurately separate *Solen sicarius* and *S. rostriformis* (which co-occur locally). Both species are on the SCAMIT Ed. 3 list, although the later is misspelled there as *S. rostiformis*. This is being corrected in Ed. 4. As adults the two species can be readily separated on the basis of the shape of the shell anterior and posterior ends, and on the proportions of the animal. These are well illustrated in Plate 93 in Coan et al (2000). Problems arise, however, in attempting to apply the characters which separate the adults to separation of small juveniles. We examined a number of lots selected by Kelvin from San Diego material. We checked both the proportion of the shell (ratio of length to height), and the nature of the two ends of the shell. We also examined the dentition, the structure of the pallial sinus, and the periostracum, as potential separators. Since all the material examined was shell only we were unable to examine the body itself for characters which might be useful. Don Cadien maintains that mantle pigmentation patterns and intensity varies between the two species, especially along the ventral margin. Of the examined characters, only one seemed reliable over the range of specimen sizes available - the length/height ratio. We found that all clams with a ratio of greater than 4 were *S. rostriformis*, while those with a ratio less than 4 (usually 3.25 - 3.5) were *S. sicarius*. Even so we deemed it inappropriate to attempt to separate these two species in specimens less than 10mm in overall length. These should be reported as *Solen* sp., recognizing that the growth allometry which produces the clear differences in the adult has at this point not yet had sufficient time to express itself.

Similar reservations were expressed in determination of species for small mactrids. A lot initially identified as *Mactromeris hemphilli* was examined, and both Paul and Gene thought it better left at Mactridae. These animals were also less than 10mm, while the adult of this species, and of many of the local mactrids, was an order of magnitude larger. Additionally they questioned if *M. hemphilli* still lives in the area. No recent reports of living animals have been received, although museum specimens exist which place it historically as far north as Cayucos.

Several small animals identified with provisional names were, however, identifiable to species. Specimens of *Cymatioa electilis*, *Sphenia luticola*, and *Kellia suborbicularis* were identified by Gene and Paul. A voucher lot of *Cymatioa* from the City of San Deigo was also examined and found to be *Rhamphidonta retifera*. Don Cadien promised to send Kelvin additional material taken from off Palos Verdes for comparison. *Cymatioa* can be readily separated from all other similar small rounded clams by the presence of projecting points along the ventral margin. These occur elsewhere only in such forms as pholadids and cardiids, where they are the continuation of prominent surface ribs. In *Cymatioa* they have no corresponding ribs or ridges visible on the shell surface.

A voucher lot of *Caryocorbula porcella* was verified and the authors indicated that both this and *Juliacorbula luteola* should occur in our samples. The later is a shallower animal, however, and offshore corbulid specimens are likely to be *C. porcella* rather than *J. luteola*. Gene Coan expressed dissatisfaction with the

current generic/subgeneric allocations of Eastern Pacific species, a concern he also addressed later (in June) during his Western Society of Malacologists talk in San Diego.

Kelvin also raised other issues of uncertainty regarding local bivalves. He felt that, based on the characters used in the book, he could not reliably distinguish between *Ennucula tenuis* and *E. cardara*. Don Cadien brought out specimens from about 1150m in the Tanner Basin off southern California which he believed to be *E. cardara*. Upon examination Paul and Gene thought otherwise, finding them to be *E. tenuis*. Since *E. cardara* is found only below 1600m (as far as is known), we are unlikely to have to distinguish it from *E. tenuis* in our monitoring. The question may become more pressing if the next regional survey is pushed out into the basins. Other than the differences in shape visible in Plate 4 of Coan et al (2000) the characters listed in the character table offer little potential assistance in separating the two. The plate, however, shows *E. cardara* to have more central umbos, with a longer anterior slope. The umbos of *E. tenuis* are quite close to the anterior end of the shell, and the anterior slope is short in consequence. More critical perhaps is the ability to separate *E. tenuis* from *E. linki*, whose distributions overlap bathymetrically. Fortunately the resilifer of the latter is much smaller and less projecting than that of the other two local members of the genus, so separation should be clear.

Kelvin distributed a draft voucher sheet for a new taxon he was erecting, *Mysella* sp H. This is the species commensal on the setae of *Blepharipoda occidentalis*, and especially *Isocheles pilosus*. They are small, and had been interpreted as juveniles of *Mysella pedroana* by Don Cadien when taken in earlier shallow surveys by MBC. Kelvin sent specimens he'd discovered to Paul, who determined that though small they were mature, and the larger individuals brooding. They appear to be *Mysella* rather than *Rochefortia*, and have heavy hinge teeth. Differences from other species and available ecological information on the species will be included in the sheet Kelvin is preparing.

Carol Paquette brought along a series of oysters for expert examination, having taken her best shot at their identification using the book. Oysters are one of those groups that have been both intentionally and unintentionally transported all over the world by man. The likelihood of having introduced species is thus very high in harbor situations. Carol's specimens came from various parts of the Los Angeles/Long Beach Harbor complex, and were thus suspected of being introduced. Gene tackled these with her using a draft of the new bivalve key from the next edition of Light's Manual. These seemed to be partly *Ostrea conchaphila*, the local species, and partly something else. After struggling for awhile, they concluded that they couldn't conclude anything. She also brought, for ID confirmation, a very large specimen of *Pteria sterna* which had settled and grown to maturity during the last ENSO event.

Late in the afternoon, while everyone was tired, Don Cadien brought out a series of specimens from mid-slope off Oregon for interested parties to examine. Included among the species represented were *Axinodon redondoensis*, *Mendicula ferruginosa*, and four or five other species in the Thyasiridae. Several blue iridescent pectinid valves were also present which were thought to be *Cyclopecten groenlandicus*. They proved to be juveniles of *Delectopecten vancouverensis*. The sample examined also had a single specimen of *Lyonsiella quaylei*, which is not uncommon for that region.

Most of the group managed to stay till the bitter end, and we only convened when it came time for Gene Coan to catch a flight to Mexico. Our thanks to both Paul and Gene for fielding our comments and questions on the book, and giving so graciously of their time.

THE SCOOP ON CLEANING YOUR SCOPE

Member Tom Parker (CSDLAC) sent in the following helpful discussion of an unavoidable task confronting us all from time to time.

"Highlights from the magazine Microscopy Today include descriptions for effectively cleaning microscope lenses. These include:
- Never "dry" clean a lens.
- Use an aqueous solvent or liquid to loosen and remove what is on the lens.
- Use the best quality lens tissue.
- Avoid abrasion by always wetting the lens surface before rubbing with lens paper. In addition to commercial microscope lens cleaners, some microscopists use "Sparkle" or "Windex" as the solvent. If you use cotton applicator sticks, inspect them for debris and wet them prior to touching the lens. A pre-moistened lens maybe cleaned with a drop of "Dawn" dish soap, gently worked with an applicator, and rinsed with deionized water from a squeeze bottle. Compressed gas such as CO-2 is an effective way to streaklessly remove the water."

[the commercial products mentioned above were those mentioned in Microscopy Today, not those tested to be most effective by any SCAMIT member. Similar products can probably be substituted to equally good effect - even generic and store brands. As long as they contain isopropyl or ethyl alcohol they will accomplish their goals as solvents. Any cleaning product containing surfactants should produce results similar to those from the soap brand indicated above - Ed]

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Volumes 8 - 15 ..... $ 20.00/vol.

Single back issues are also available at cost.

Southern California Association of
Marine Invertebrate Taxonomists

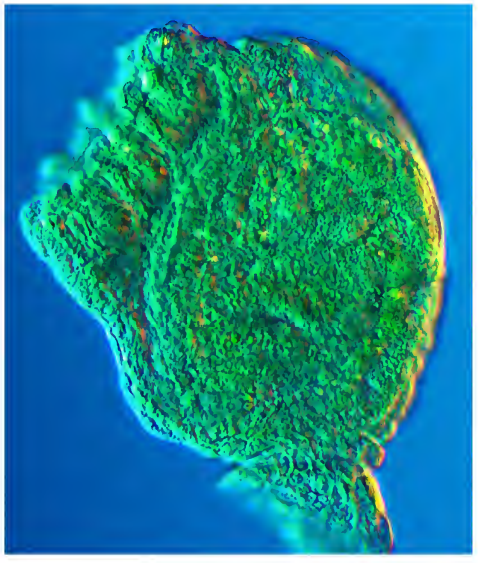
3720 Stephen White Drive
San Pedro, California 90731

June, 2001

SCAMIT Newsletter

Vol. 20, No. 2

SUBJECT:	Taxonomic Database Discussion - Part I
GUEST SPEAKER:	Led by Ron Velarde and Rick Rowe (CSDMWWD)
DATE:	20 August 2001
TIME:	9:30 a.m. - 3:30 p.m.
LOCATION:	SCCWRP 7171 Fenwick Lane, Westminster, CA



Whole mount of *Loxomespilon*? sp. removed from *Nephtys* sp SD2. Image by K. Barwick. (I15(1) 3 JAN 01 103ft.)

Next Meeting: Come prepared to discuss how you currently handle the maintenance of collection information, taxonomic changes within the existing database and collections base for your organization, and the pro's and con's of your current use. Think ahead as to what you might be interested in expanding into (i.e. if you currently do not track voucher specimens, how would you like to do so). Create a wish list of what you would love to be able to do if you could get it implemented. Think regionally; our databases are increasingly asked to serve the dual purposes of our own monitoring and of providing data in common formats to new databases designed to achieve regional monitoring goals. Larry Cooper of SCCWRP will be on hand for this discussion and can bring us up to date on the decisions implemented in the regional monitoring Information Management Plans. These discussions will be resumed as Part II at the December meeting, and will extend to the

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new area: what can I get off the shelf? We will examine a list of available software for collections, and taxonomic information management. A list of potential candidates for this later discussion will be distributed at the August meeting.
For additional information please see the flyer at the end of this Newsletter.

NEW LITERATURE

Most opisthobranchs are clearly either aeolids or dorids, with a smattering distributed among other groups of nudibranchs and some related groups. Valdés & Camacho-Garcia (2000) describe a new species from the tropical Eastern Pacific in the "related groups" category. This is a polybranchiid sacoglossan of genus *Cyerce*. There are no local representatives of the group, but excursions into warmer waters to the south of the Southern California Bight will yield several. The species described here has also been seen, by the editor, closer to our area in central West Mexico around Bahia Banderas. A nice summary of the group worldwide is provided by the authors.

Another "related group" animal is described by Cervera et al (2000), this is a notaspid sea slug of the genus *Berthella*, of which several occur in our area. The new one is from the Canary Islands so we are unlikely to be seeing it any time soon, but the authors re-examine the phylogenetic relationships in the group, and their analysis is applicable to our fauna.

Snails of the genus *Crepidula*, the slipper limpets, create problems for the taxonomist relying on gross shell characters by conforming closely to the contours of their substrate. The flat white species are especially troublesome, and it is this group which Collin (2000a) discusses. She focuses on Atlantic species, but her character discussions are informative with regard to California species and how to examine them.

She also investigated the reproduction and early development of *Nitidiscala tincta* in California, looking for evidence concerning the placement of the family Epitoniidae within the gastropods (Collin 2000b). Her examinations suggested that some features of the animal's development are similar to heterobranchs while others are more typical of caenogastropods. While she found adult morphology was that of caenogastropods, the position of the epitoniids within the gastropods remains equivocal. The author suggests further investigation along these lines with a broader species sampling.

Gerken et al (2000) clarified the position of *Brachydiastylis nimia*. They obtained collections with many males, a luxury not enjoyed by Hansen when he described the species based on females only. They found that the males uniformly had only a single pair of pleopods rather than the two pairs found in virtually all other diastylid genera. In consequence they created a new genus *Ektonodiastylis* to house *nimia*, and a newly described congener *E. robusta*. They provide a rediagnosis of the family to accommodate this new genus and *Atlantistylis*, which lacks pleopods in the male.

The tanaid genus *Collettea* was revised by Larsen (2000). The genus, typically found in deep water, is widely distributed. There are several species in the north Pacific, as well as others in the Mediterranean, Antarctic, north Atlantic, south Pacific and off Australia. Larsen provides a first key to the genus and discusses it's relationship within the family Anarthruridae where it apparently belongs. However, it does not fit into any of the available subfamilies. The genus is characterized, among other things, by very short biramous uropods covered by a plate-like pleotelsonic extension dorsally. It is found in older texts as *Strongylura*, a name which was preoccupied.

Genetic examination of populations has often proven that considerable diversity resides behind morphologically similar exteriors. Frequently such examinations have revealed cryptic taxa which differ in no easily observable way. Further examination will often reveal small details, previously considered insignificant, which will allow separation of the sibling species on morphological grounds. This may prove to be the case with a complex of corophioid amphipod species revealed by allozyme analysis in New Zealand (Schnabel et al 2000), but as yet they cannot be separated morphologically. The authors consider the possibilities of dispersal and isolation as influenced by the physiography of New Zealand, and the flow of currents along the coast. The limited dispersal abilities of brooding peracarids such as this, make them ideal candidates for speciation and local endemism.

KOMMENSAL KAMPTOZOANS

A Preliminary Review of the Solitary Kamptozoans Described from the North Eastern Pacific

by Kelvin Barwick (CSDMWWD)

Recently I found a strange organism attached to the parapods of a *Nephtys* sp SD2 (Figure 1). Upon closer examination and consultation with my colleagues, it was determined to be a Kamptozoan (entoproct). I sent digital images to Dr. Kerstin Wasson (1997) who has written a monograph on the Pacific coast colonial forms of Kamptozoans. She was able to confirm the identification. My curiosity piqued, I decided to further research the group. Below is a synthesis of the information that I was able to glean from the literature.

There are two orders of Kamptozoans Cori, 1929: the colonial forms, which are mostly free living (Order Coloniales), and the solitary forms (Order Solitaria, Family Loxosomatidae). As mentioned earlier, the colonial fauna of the Pacific coast has been

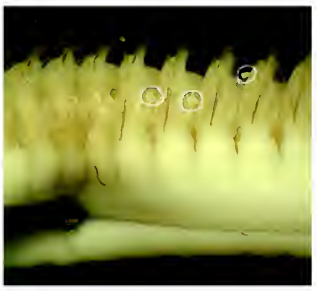

Figure 1 — Ventro-lateral view of *Nephtys* sp SD2 with *Loxomespilon*? sp. in situ (circled). (I15(1) 3 JAN 01 103ft

reviewed by Wasson (1997), therefore, I will limit my discussion to the Order Solitaria and its single family Loxosomatidae. The family is described as solitary, without a star cell complex between the transition of the stalk and the body (calyx). When sexual reproduction occurs the female broods eggs and releases either a benthonic or planktonic larvae. Asexual reproduction is by budding from the calyx. Loxosomatidae are usually epizoic on a host organism. Hosts include polychaetes (with attachment either on the inside of the host tube or on the host itself), sipunculans, bryzoans, sponges, and ophiuroids. Their epizoic lifestyle allows them to take advantage of the current created by their host. Worldwide there are three known genera: *Loxosoma* Keferstein, 1862, *Loxosomella* Mortenesen, 1911, and *Loxomespilon* Bobin & Prenant, 1953 (Nielson, 1989).

The genus *Loxosoma* has 25 described species (Nielsen, 1996). This genus lacks a foot even on the buds (asexual juveniles). The stalk is attached to the substrate by a round sucking disk which the animal is able to detach, move and reattach to the substratum. One species is interstitial, the remaining species are associated with the polychaete families Capitellidae, Scalibregmatidae, Maldanidae, Terebellidae, and Pectinariidae (Nielsen, 1989, Soule and Soule, 1965). A species reported from the eastern Pacific is *Loxosoma davenporti* Nikerson, 1898 at Hammond Bay Lagoon, British Columbia (Osburn, 1953) attached to the inside of the tubes of *Clymenella zonalis*

(Maldanidae: Polychaeta) (Nielsen, 1996). Curiously the type locality for *L. davenporti* is New England. Osburn (1953) mentions a second undescribed species of *Loxosoma* (as ?*Loxosoma* sp.) found "epizoic on an annelid worm" at Point Barrow, Alaska.

Loxosomella produces buds (asexual juveniles) which have a separate foot gland and a foot groove lined with accessory glands. After detachment from the parent, the foot may or may not be retained in adults. Individuals that retain the foot gland are able to move around on the host. Other species who lose their foot gland as adults remain permanently attached to the host (Nielsen, 1989, Soule and Soule, 1965). In this genus there are approximately 75 described species (Nielsen, 1989) which have been reported from a wide variety of hosts including the polychaete families: Aphroditidae, Polynoidae, Nephtyidae, and Eunicidae; and on sponges, sipunculans, ectoprocts, and echinoderms (Nielson, 1996). In addition, Soule and Soule (1965) reported them as occurring on corals, mollusks, algae and rocks. There are three species described from the eastern Pacific. Two species, *L. macginitieorum* Soule and Soule, 1965 and *L. prenanti* Soule and Soule, 1965 were both found attached to the gills of the stomatopod *Hemisquilla ensigeria californenisis* (as *Pseudosquilla bigelowi* in Soule and Soule, 1965) from Pt. Hueneme and Ventura, California. The third species , *L. nordgaardi* Ryland, 1964, is found to occur on ectoprocts, e.g., *Tegella* sp. (Kozoloff, 1996). Osburn (1953) mentions an undescribed species of *Loxosomella* (as *Loxocalyx* sp. now a junior synonym) attached to *Gattyna cirrosa* (Polynoidae: Polychaeta) from Puget Sound, Washington. *G. cirrosa* is itself a commensal of the *Amphitrite* sp. (Terebellidae: Polychaeta) (Nielsen, 1989 and Hutchings, 2000). Dr. Wasson reported a number of undescribed species from the California coast (personal communication May 4, 2001). Figures 2 and 3 show a *Loxosomella* sp. found attached to the ventral surface of an *Aphrodita armifera* (Aphroditidae: Polychaeta) collected offshore San Diego.

Figure 2 — Whole mount of *Loxosomella* sp. removed from ventral surface of *Aphrodita armifera*. Note attached bud. The calyx dimensions are 0.160 mm wide by 0.252 mm long. (I9(1) 2 JAN 01 93 ft)

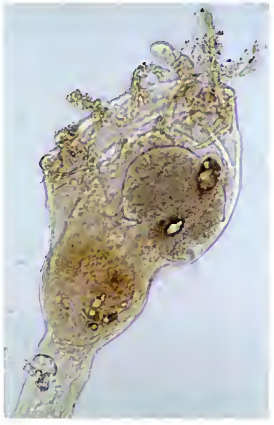

Figure 3 — Whole mount of second specimen of *Loxosomella* sp. removed from ventral surface of *Aphrodita armifera*. The calyx dimensions are 0.156 mm wide by 0.222 mm long. (I9(1) 2 JAN 01 93 ft)

In the genus *Loxomespilon* the stalk is lacking. The animal is attached directly to substratum (Nielsen, 1989). There is only one described species, *Loxomespilon prezei* Bobin and Prenant, 1953, found on the branchiae and elytra of *Sthenelais boa* (Sigalionidae: Polychaeta) from Roscoff, France on the English Channel (Bobin & Prenant, 1953). Dr.

Wasson reports encountering *Loxomespilon* species on *Diopatra* sp. from Puget Sound. She further added that she has accounts from A. Kohn and E. Kolzoff of seeing something similar on *Nephtys* sp. (Nephytidae: Polychaeta), from San Juan Island, Washington (personal communication May 4, 2001). Figure 4 and the cover photo show a specimen of a possible *Loxomespilon* sp. (Wasson personal communication May 7, 2001) found on *Nephtys* sp SD2 collected in San Diego.

Thanks to Dr. Kerstin Wasson for promptly and cheerfully answering my many emails and Don Cadien for the use of his large library.

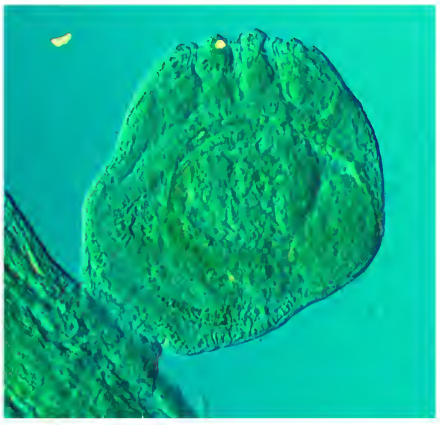

Figure 4 — Whole mount of *Loxomespilon*? sp. removed from *Nephtys* sp SD1 with host tissue attached. The calyx dimensions are 0.44 mm wide by 0.156 mm long. (I15(1) 3 JAN 01 103ft.)

ANOTHER CONTRIBUTION

Kelvin Barwick has also been busily working on his other favorite group, mollusks. In the taxonomic tools section of the SCAMIT website you will find a voucher sheet for his and Paul V. Scott's latest find, *Mysella* sp H.

MINUTES OF THE 11 JUNE MEETING

The meeting was held at the Los Angeles County Museum of Natural History. President Ron Velarde opened the business portion of the meeting at 9:45a.m.

The first topic was upcoming SCAMIT meetings. There will be no SCAMIT meeting in July. In August a meeting to investigate taxonomic databases will be held at SCCWRP. Any member with interest or experience using descriptive database software is encouraged to attend this discussion. For the September meeting, Larry Lovell will give a presentation on the Euclymenid Maldanids from the Bight'98 project. Larry identified this taxa for all the stations. This meeting will be held at the Scripps Institution of Oceanography. In October the meeting topic will be Phoxocephalids, lead by Don Cadien and Dean Pasko.

Vice-President Leslie Harris put out a request for SCAMIT meeting topics. If anyone has a suggestion for a meeting topic and/or know someone who could be invited as a guest speaker, please let Leslie know.

Leslie introduced Phil Hoover who is new to the Los Angeles Museum of Natural History and works in the Marine Biodiversity Sorting Center. His speciality is Amphilochid amphipods. We are looking forward to having Phil as a guest speaker at a SCAMIT meeting.

There are a few upcoming meetings of interest. The Western Society of Malacologists meeting is June 20-24 in San Diego. The International Polychaete Conference is July 1-7 in Iceland. The Western Society of Naturalists meeting is November 9-12 in Ventura.

Next, Ron passed around the SCAMIT treasurer's report for 2000-2001. The latest SCCWRP annual report (1999-2000) is out. You can contact SCCWRP (www.sccwrp.org) for a copy.

Rick Rowe passed around an announcement of a MMS environmental studies program involving the Gulf of Mexico. The title is "Deepwater Program: Assessment and Reduction of Taxonomic Error in Benthic Macrofauna Surveys: An Initial Program Focused on Shelf and Slope Polychaete

Worms". Their objective is to assess and reduce taxonomic error at the species level through use of computer aided identification, specifically DELTA (Descriptive Language for Taxonomic Analysis). More information on this study can be found at their website,

http://www.mms.gov/eppd/sciences/esp/profiles/gm/GM-92-42-68.htm

Tom Parker notified us about four polychaete papers that are included in the latest Proceedings of the Biological Society of Washington issue (Vol. 114, No. 2). They are:

1) *Eulalia gemina* (Phyllodocidae: Polychaeta), a new species from Shirahama, Japan by Tetsuya Kato, Fredrik Pleijel, and Shunsuke Mawatari.
2) Two new species of *Platyneris* (Polychaeta: Nereididae) from eastern Mexican shores by Jesús Angel de León-González, Vivianne Solís-Weiss, and Verónica Valadez-Rocha.
3) A new species of Dorvilleidae (Annelida: Polychaeta) from a cold seep site in the northeast Pacific by Brigitte Hilbig and Dieter Fiege.
4) Revision of five species referred to *Myriochele* and *Galathowenia* (Polychaeta: Oweniidae) from the Antarctic Seas based upon type material by Julio Parapar.

Rick Rowe handed out a voucher sheet for *Notomastus* sp SD 1. This species was formerly referred to as *Notomastus tenuis* Moore 1909 by SCAMIT.

Tom Parker talked about his voucher sheet for *Loimia* sp. This is a draft which has been distributed, and Tom would appreciate comments and feedback.

There are two new employees at Los Angeles County Sanitation District. Lisa Haney will be working on crustaceans and echinoderms, and Shelly Walther will be involved with the data management system.

We then continued our critique of the MMS Taxonomic Atlas, Volume 7, with the Oweniidae, Chapter 5. Our common *Myriochele* sp M is now synonymized under *M. striolata*.

Rick Rowe pointed out the difficulty using couplet 4A and 4B. This couplet separates *Myriochele* and the newly proposed *Galathowenia*. Using the oral slit and mouth position to separate *Galathowenia* from *Myriochele* is difficult with many specimens. The preponderance of individuals with regenerated anterior ends and the variability of contraction in preserved material complicates attempts at generic placement using this couplet.

During the discussion Leslie Harris shared the following regarding *Myriowenia*. In the original description of *Myriochele gracilis* Hartman 1955, Dr. Hartman included in part (pl. 2, figs. 3, 4 and 5) what she would describe in 1960 as *Myriowenia californiensis*. Hartman specifically listed the 1955 illustration (pl. 2, fig.5) of the anterior end included in the original description of *M. gracilis* in the synonymy of her 1960 description of *Myriowenia californiensis*. Leslie thinks that her statement in the original description, that *M. gracilis* has uncini starting on the 4th setiger, came from a specimen of *Myriowenia* as well as the illustrations of uncini (pl. 2, figs. 3 and 4). Leslie originally presented this emendation of *Myriochele gracilis* in 1985 (SCAMIT Newsletter Vol. 4, No. 2, 3). The MMS Taxonomic Atlas Vol. 7, page 108 contains an additional discussion of the corrections to Hartman's original descriptions.

Couplet 7A and 7B in the key on page 101 uses thoracic uniramous setiger counts to separate *Myriochele olgae* from *M. gracilis* and *M. striolata*. Leslie Harris believes specimens of *M. olgae* to be juveniles of *M. gracilis*. Leslie has looked at a paratype lot of *M. olgae* and identified them as juvenile *M. gracilis*. The tubes of these specimens were similar to tubes

of *M. gracilis*. The holotype of *M. gracilis* has uncini that start on setiger 3. Additionally, Leslie has seen specimens with an unequal number of uniramous setigers. At least one paratype has uncini that start on setiger 3 on one side of the animal and setiger 4 on the other side. Therefore, SCAMIT does not concur with the usage of *M. olgae* and concluded that *M. gracilis* can have uncini starting on setiger 3 or setiger 4.

The note on the bottom of page 102 of the MMS Taxonomic Atlas, Volume 7 states that *G. wilsoni* fragments between setigers one and two, and the posterior body fragments have been mistakenly identified as *Myriochele scotiae* Hartman 1978, further evidence that fragmentation and regeneration complicate identification of many specimens.

Rick has observed methyl green staining patterns of *Myriochele* which seem to be useful for some identifications, especially regenerating or very small individuals. Several of the worm specialists at the City of San Diego are evaluating the use of staining to help separate the hundreds of specimens often encountered in their samples. The observed staining patterns will be compared to those reported in the MMS Taxonomic Atlas, Volume 7. Color images will be presented to SCAMIT if the staining patterns prove useful. As Leslie Harris pointed out at the meeting, observing the arrangement and type of sand grains utilized for tube construction is a quick and reliable way to separate two of SCAMIT's most common species, *M. striolata* and *M. gracilis*.

Galathowenia piltzi and *G. pygidialis* were discussed next. In order to distinguish these 2 species using couplet 6 on page 101, one must have complete specimens. This is often not the case with owenids as they readily fragment in the thoracic region. Rick Rowe has stained several specimens of *G. pygidialis* and has found two different methyl green staining patterns. Specimens collected from shallow water had a wedge-shaped area of stain anterior to the first setae, and the specimens collected from deeper water had rings encircling the notosetae. According to the description listed in the MMS Taxonomic Atlas Vol. 7, *G. piltzi* has a wedge of stain anterior to the first setal fascicle and occurs in shallower water than *G. pygidialis*. The possibility exists that we are collecting *G. piltzi* in addition to *G. pygidialis*, and we agreed to examine the methyl green staining patterns of specimens we are calling *G. pygidialis*. A correction was noted on page 106, 1st paragraph, line 5; delete "abdominal".

The next species under discussion was *Owenia johnsoni*. It is found in shallow subtidal sandy sediments and lacks pigment (unlike *O. collaris* which has pigment). No one at the meeting has reported *O. johnsoni* although a couple of members believe they have seen it. We will be on the look-out for it.

SCAMIT agrees with Blake's use of *Owenia collaris* for those specimens we have recently referred to *Owenia fusiformis*. See Blake's analysis separating several distinct forms of *Owenia* beginning on page 118.

Next we reviewed the Trichobranchidae, Chapter 10. In the Remarks section on page 299, Hilbig comments on the condition of the type specimen of *Artacamella hancocki* and notes an error in Hartman's 1955 description of the type. However, the type specimen was not examined by Hilbig (see Material Examined section on page 298). We made a correction to Figure 10.1.A on page 298. There should be uncini on setigers 1 and 2. "Uncini from setiger 1" is a character used in couplet 1A in the key to distinguish *Artacamella hancocki*. It was mentioned that figures more representative of our local specimens can be found in Holthe, 1977, page 36.

Octobranchus sp A - In Material Examined, add "collected at 591 meters" at the end of the sentence. This unusual species has prolonged notopodial lobes and a large paddle-shaped lip below the main fang on the uncini.

Terebellides californica - There were no comments.

Terebellides horikoshii -This species has not been recorded in this area. There is a correction on page 304, 2nd paragraph, line 3; change "with main fag" to "with main fang".

Terebellides reishi - The illustration in Figure 10.5.A, page 305, looks different than the specimens that we identify as *T. reishi*. The local specimens have no anterior extension on the parapods.

Terebellides sp A - As noted in the Remarks section on page 307, these are immature specimens. Meeting participants believe it was premature to assign a provisional species status to these immature specimens.

Terebellides sp C - These specimens are also immature and appear to be different than Williams 1984 *T.* sp C.

SCAMIT recommends the use of Williams 1984 Terebellid key, since the key in this chapter does not include some of our local species. *T.* sp Type C (nr. *stroemi*) and *T.* sp Type D (nr. *kobei* and a likely synonymy), both of Williams 1984, are present locally.

Then we viewed a specimen of *Bizzarobranchus* sp A from Tony Phillips that was collected in 1988 from LA3 dumpsite. This unique specimen had 2 pairs of peristomial wings and 16 thoracic setigers.

We also examined a specimen of *Trichobranchus* sp HYP 1 brought by Tony. This species was reported from Catalina station 2075 at a depth of 65 meters during the Bight'98 project. Characters include 15 thoracic setigers, thoracic uncini start on setiger 6, three pairs of thin, filiform branchiae on segments 2-4, prostomium not bilobate, eyes absent, peristomium simple, enlarged ventrally to form a thick lip with longitudinal folds, connected laterally are a pair of wide, thin wing-like lobes that extend dorsally. This specimen has approximately 70 abdominal setigers. This appears to be a new generic record for this area.

The discussion diverged momentarily to the topic of *Nereis procera*. Leslie had examined the holotype and illustrated the prostomial area with an everted proboscis. It is noteworthy that the proboscis of the holotype had significantly smaller paragnaths than local specimens of *N. procera* collected near Hyperion. Leslie also requested that we gather specimens of *N. eakini* a nereid with a very uniquely pigmented body for which no good illustrations exist.

The first genus to review in the Terebellidae chapter was *Pista*. We examined a specimen brought by Rick Rowe. It had large lateral lappets and a pronounced ridge originating from the base of the 2nd pair of branchiae extending dorsally on the expanded 2nd segment. The specimen was collected from Mexico borderlands. No one could place a species name on it, and it matched none of the species in the chapter, so the identification will remain as *Pista* sp. for now.

Pista bansei: On page 271, in the Remarks section, we agreed with the last line, "The two species should perhaps be synonymized, but until the type material can be compared, the specimens called *Pista* sp B(of Phase I and Phase II) are assigned to *P. bansei* because of the clearly long-shafted thoracic uncini."

Pista elongata: This species has anterior uncini that are much larger than most other species of *Pista*. *P. dekkerae* and *P. pacifica* are two more species that share this character, distinguishing all three of these species from other species of *Pista*. Leslie commented that she has examined specimens of *P. elongata* collected from Puget Sound, Washington, and they turned out to be more accurately identified as *P. dekkerae*.

Pista wui: A correction was noted on page 280; under the Remarks section, in the 5th line, change "*P. disujuncta*" to "*P. disjuncta* ". The idea of including our local *P. disjuncta* as a synonym of *P. wui* was discussed. Leslie explained that she has examined specimens of *P. wui*, identified by Saphronova from the Atlantic and Pacific coasts of North America, and they are different from *P. wui* described on page 279. In *P. wui* sensu stricto, the nephridial papillae occur in indentations which *P. disjuncta* does not have. These nephridial "pits" occur just dorsal and posterior to the notopodial lobes on two anterior setigers. We then examined a specimen of *P. wui* that Leslie brought out from the collection identified by Saphronova and confirmed this observation. In consideration of this information, SCAMIT does not consider *P. disjuncta* a synonym of *P. wui* at this time, and *P. wui* sensu Hilbig (on page 279) is not *P. wui* sensu stricto nor *P. disjuncta* sensu SCAMIT. The next question was, are the specimens that we call *P. disjuncta* sensu SCAMIT more than one species? We decided to use *P. disjuncta* sensu SCAMIT as we have been using it, acknowledging that it is a complex. We will modify the SCAMIT species list to *P. "disjuncta"* .

Proclea graffi - The only comment made was that this is not our *Proclea* sp A. It has a different methyl green staining pattern. We have not reported *P. graffi,* but *P.* cf *graffi* occurs in rocks along our coast and has bands of stain on the dorsum according to Leslie Harris.

Proclea sp B - We have not reported this species. Leslie says this is very similar to *P. graffi* but matures at a much smaller size.

Scionella japonica - We record this species and had no comments about the description.

Spinosphaera pacifica - Rick has a voucher sheet for *S.* sp SD 1 that is very similar to this species. It was decided that since we do not know if the presence of eyespots is significant, we cannot assume that the specimens described here (sensu Hilbig, with eyespots) are the same as Hessle's *S. pacifica* (without eyespots). SCAMIT will continue to use *S.* sp SD 1 and note that it may be synonymous with *S. pacifica* sensu Hilbig.

Identification of certain species of *Pista* has been problematic for a long time and has been addressed before without a satisfactory resolution. Once again we will attempt to resolve this issue but with a different strategy this time. Leslie proposed, and we decided, to implement a specimen exchange where members from each organization will pull 7 specimens of each species of *Pista* they encounter and exchange them at a future meeting.

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TAXONOMIC DATABASES MEETING - SCAMIT AUGUST 2001

A meeting to discuss the applicability of taxonomic database software to the management of descriptive data for monitoring programs will be hosted by SCAMIT (Southern California Association of Marine Invertebrate Taxonomists) on August 20.

When: Monday, August 20th 9:30 - ??

Where: SCCWRP (Southern California Coastal Water Research Project) 7171 Fenwick Lane, Westminster, CA 92683

Map & directions @ http://www.sccwrp.org/contact/map.htm

This open forum discussion will not be limited to SCAMIT members. Any taxonomist or database specialist with experience using or developing descriptive datasets is encouraged to attend.

Impetus:
The 2003 regional EMAP program sponsored by the U.S.E.P.A. will bring together major dischargers along the west coast from the state of Washington to Baja California, Mexico. While studies in the Southern California Bight have relied on the taxonomic standardization provided by SCAMIT, the 2003 regional EMAP survey will require additional tools to ensure comparability among taxonomic datasets. Can the employment of taxonomic database software increase the probability of creating more comparable datasets?

Anticipated topics:
Is there a standard among taxonomic database programs? Are the proprietary software packages suitable (e.g., Linnaeus II)? Would the effort required to develop a taxonomic dataset be worthwhile? Can a developed database system help to compensate for the disparate levels of expertise inherent among identifiers involved in a large, regional study? How can several agencies coordinate their efforts to increase the efficiency of dataset creation and compatibility? What resources are available (e.g., personnel, funding, and agency participation)?

Participation:
Please bring questions, tales of success or failure, and any pertinent information.

If you wish to present (i.e., Powerpoint, 'chalk talk', or more informally) please contact Rick Rowe, City of San Diego Ocean Monitoring Program (619) 758-2333 or r6r@sdcity.sannet.gov

We will have a multimedia projector available

Southern California Association of
Marine Invertebrate Taxonomists

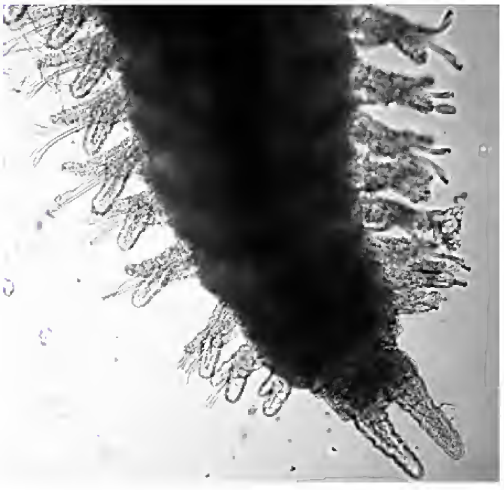
3720 Stephen White Drive
San Pedro, California 90731

July, 2001

SCAMIT Newsletter

Vol. 20, No. 3

SUBJECT:	Opisthobranchs
GUEST SPEAKER:	Dr. Angel Valdés
DATE:	5 Novmber 2001
TIME:	9:30 a.m. to 3:30 p. m.
LOCATION:	Times Mirror Room Los Angeles County Museum of Natural History



Scoletoma sp C - pygidium
Image by K. Barwick and L. Lovell

Dr. Valdés is the new curator of Mollusca at the museum, occupying the position left open by the retirement of Dr. Jim McLean. Jim is actually still in residence as Curator Emeritus and still maintains regular hours, but has retired (he says "no more meetings!!"). [Interestingly enough George Davis in Crustacea says that Jim now makes all the divisional meetings...it is so much nicer to do things you want, than to do things you have to...].

Dr. Valdés specializes on the opisthobranchs, a group which Jim did not (he used to call them worms, much to my discomfiture). He spent the last several years at the California Academy of Sciences under a PEET grant with Dr. Terry Gosliner. We hope to entice him to active engagement with SCAMIT, and should give him a warm welcome during this meeting. I am sure he would be delighted to view either specimens or photographs of opisthobranchs.

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THE ARCO FOUNDATION, CHEVRON, USA, AND TEXACO INC.
SCAMIT Newsletter is not deemed to be valid publication for formal taxonomic purposes.

There was no meeting in July, so minutes are lacking here.

New Literature

New information in the continuing search for our roots was presented by Peterson & Eernisse (2001), using a blend of morphological and 18S rDNA data. They provide a concise statement of the competing arguments by various investigators on the origins of the Bilateria and the higher level relationships between animal phyla. Their analysis provides support for the Ecdyzoa hypothesis, and for the idea that arthropods and annelids are not closely related. Their data suggest arthropods are allied with other molting organisms among the ecdyzoan group, while the annelids join those with spiral cleavage. They view the Ctenophora as the valid sister group of the bilaterians. Of course this is not the last word, but this article does provide a useful point and we should tune in to the ongoing, competing arguments for an update.

Nemerteans have, and continue to be, a group where the lines of relatedness are tangled and knotted, providing plenty of room for controversy regarding relationships within the phylum. Härlin & Härlin (2001) revisit conclusions reached previously and add morphological data from several eureptant nemerteans not included in earlier analyses. They also cast their results in terms of phylogenetic taxonomic practice. As such it is difficult to relate their information to our more applied Linnaean binomial nomenclature. Their analysis is still of considerable interest, and when coupled with the zoogeographic analysis they provide, informative.

Vermeij (2001) combines a number of lines of evidence to trace the history of predatory gastropod mollusks which bear labral teeth. Working with organisms which leave hard-part evidence on their death, he can draw on an extensive fossil record of these animals. He identifies a variety of different types of labral tooth structure and finds evidence in the fossil record of multiple origin of these structures. He identifies at least 58 separate derivations of this character (labral armature) among the over 600 species in which it occurs. Over 250 of these species are alive today, while the remainder are extinct. They are not evenly distributed through the fossil record and the pattern is analyzed by the author. He also provides an appendix addressing each of the identified clades individually. A most interesting examination of a particular group of characters, their functional interpretation, and their evolutionary history.

The Doridoxidae are an odd group of deep-water opisthobranchs which are poorly represented by collected specimens (4 specimens in two species). Schrödl et al (2001) gather together the sparse information on the members of this family and reevaluate relationships both within the family and between it and other dorid families. Since doridoxids have characters which have placed them as intermediates between the anthobranchiate dorids and the cladohepatic opisthobranchs, this reevaluation of the available material forms the basis for a reconsideration of the basal relationships between these groups. Doridoxidae and Bathydorididae had long been united (following Odhner) on the basis of their jaw structure in the Gnathodoridacea. The reanalysis of the doridoxid material refutes this and leads to a new cladistic analysis of the dorids which separates these families. The Doridoxidae are, along with the cladohepatic opisthobranchs (tritoniids, dotoids, arminids, aeolids etc.), united into a new clade termed Dexiarchia. Bathydoridids are united with the holohepatic dorids. Any conclusions based on such scant material must remain provisional pending better and more abundant material, but these results provide an improved working hypothesis of the basal divisions in the opisthobranchs.

Thorson's rule is reexamined by Gallardo & Penchaszadeh (2001) using data from the southern hemisphere. They find, interestingly, that there is a pattern in where it appears to apply and where it does not. The "rule" states that the proportion of species with pelagic larva decreases with increasing latitude. The authors find that while the rule often holds, it can only do so where there is mixed substrate available. They found, for instance, that in the Western Atlantic where long stretches of uninterrupted soft bottom occur, Thorson's rule does not apply.

Members of the mytilid bivalve genus *Amygdalum* are reviewed world-wide by Oliver (2001) as part of a description of a new species from the Arabian Sea. He examines the relationship between these species and the presence of the oxygen minimum zone and concludes that their world-wide distribution does not support them as indicators of low oxygen environments. Illustrations of the shells of all known species in the genus, and of some other mytilids, are provided. The author retains *Amygdalum pallidulum* as a separate species from *A. politum* in this treatment without commenting particularly on this usage or the synonymy of the two in Coan, Valentich Scott, & Barnard (2000).

A new analytical method, molecular morphometrics, is introduced by Billoud et al (2000). They offer it as another tool in the assessment of phylogenetic relationships. They demonstrate the method in a consideration of cirriped phylogeny. The authors suggest that this method is particularly useful in areas where multiple alignments are unreliable because of excessive insertions and deletions. Rather than offer to facile a digestate of this, I suggest that interested parties seek out and read the paper.

Dreyer & Wägele (2001) examine the phylogenetic position of the family Bopyridae, a parasitic isopod, using both morphological and rDNA data. They conclude that Bopyridae and Cymothoidae are sister taxa, both derived from predatory/scavenging cirolanid-like ancestors. The use of the family Bopyridae herein to denote the Epicarida as a whole is weakened by the failure of the authors to include representatives of the other three families, Dajidae, Entoniscidae, and Liriopsidae included in the group in their analysis. They suggest, based on their analysis of the molecular data, that Bopyridae become a subfamily within Epicaridea, which is reduced to family status as Epicaridae, and placed with the Cymothoidae in the Flabellifera. This is at variance with other estimations of the placement of the group.

How communities and their constituent populations recover from environmental insult (usually resulting from anthropogenic pollutant disasters) is a subject of considerable interest to those who must deal with regulating man's activities in the biosphere. Poggiale and Dauvin (2001) examine three benthic *Ampelisca* populations in an area heavily impacted by the Amoco Cadiz oil spill. Based on their long-term monitoring of these populations and several environmental parameters, they propose a model which can be used to test predictions concerning recovery. The dominant feature of the early years of recovery was the lingering effect of the initial pollution incident. Two of the three populations did not begin to recur in the study area until more than 10 years after the initial spill. The third was present earlier at low density, and recovered to high density populations about the time that the other two species began to appear. Once this initial effect was surpassed, the model was dominated by the effects of competition between the species. While temperature was included, it only materially affected the seasonal cycling of population densities. Such detailed long-term examinations of individual infaunal species are rare, and although none of the three species involved occur in the Eastern Pacific, should be reviewed by all crustacean workers, if not all benthic ecologists.

One of the logical directions in which monitoring attention might be focused in the southern California Bight is the offshore portion of currently monitored shelf areas. It is traversed by anthropogenic materials deposited onto the shelf and into the waters above it. Gravity wins in the end and nearly all these materials find their final resting place in one of the deep basins which, together with the ridges, banks, and islands separating them, form the Southern California Borderland. Communities on the continental slope and its basins differ in some respects from those found in the relatively shallow waters of the continental shelf. Gage (2001), discusses some of these differences in a consideration of utilization of deep benthic communities in assessment of environmental impact in the North Atlantic, . We should consider the issues he raises as we contemplate inclusion of deep offshore stations into our next regional monitoring effort.

As we all know our sampling itself has an effect on the communities involved. Jennings et al (2001) have another go at consideration of how trawling affects the benthos over which the net passes in it's search for demersal fish and invertebrates. Their particular interest was the effect of trawling on benthic production processes. They found that in some cases production per unit biomass increased in areas of trawl disturbance. This might be anticipated as larger, longevous organisms are removed by trawls and replaced by new, small, opportunist invaders with short generation times. In the cases they cite, however, total production fell as the larger animals were removed, and at higher levels of disturbance even the effect of the opportunists was reduced.

Their data was obtained using commercial beam trawls rather than the smaller, experimental otter trawls used for local monitoring, but we might expect that the trends they observed would be echoed in areas affected even by our smaller gear.

Reefs are complex systems. Searching for a cause of change in the status of coral-reef habitats is a tricky proposition. The decline of coral reef health in the Caribbean has been attributed to many different causes such as: a severe coral bleaching episode (usually tied to elevation of sea-surface temperature), a die-off of the large sea urchin *Diadema antillarum*, over-fishing, increases in anchor-scaring of reefs, and nutrient enrichment of waters impinging on reefs by man (either as agricultural run-off from land use changes, or as a result of domestic waste introduction).

The most evident result of declining reef condition is the overgrowth, by algae, of the coral colonies which constitute much of the reef. Leafy and filamentous algae are always a constituent of reefs at some level, but when they begin to dominate in terms of areal coverage, a reef is definitely in trouble. Williams & Polunin (2001) suggest that there is no simple answer to who (or what) is responsible for reef decline. They examined a series of reefs in different areas and concluded that it is likely that all the physical and biological effects listed above do impact reefs to some extent, and that their synergism can produce major changes once thresholds of effect have been exceeded. The system seems to function much like that of the giant kelp beds in southern California where human impacts on a series of grazers, and predators of grazers, have broken down homoeostatic population feed-back loops and lead to instability in the system. The combination of reduced herbivory, (both in fish and in invertebrate grazers such as *Diadema*), when combined with physical damage and nutrient enrichment, has the potential to lead to algal overgrowth. We must be cautious, however, in pegging such reef degradation to a single cause. It is more likely a result of several, if not many, different changes based on the authors' findings. Modifying just one of the involved influences may not remedy the

degradation, or may change the reef in an unexpected (and possibly negative) way. More comprehensive examinations of the problem are clearly needed.

WSN MEETING

Member Sue Williams has offered to roll out the welcome mat for SCAMIT members attending the Western Society of Naturalists meeting in Ventura this November. She will welcome visits to her place (check with her first) and will point us to the best sights, the best restaurants, and the most interesting activities. We will see her at the meetings, so that is the best place to coordinate. Her phone number is listed on the SCAMIT membership list. Contact her to say hello or make arrangements.

ED. 4

As this NL goes to press the PDF version of Edition 4 of the SCAMIT Taxonomic Listing has appeared on the SCAMIT website. You can be the first one on your block to download this 196 page document, or (if you are a member) you can wait for one to two weeks for the hard-copy version to become available. If you are one of the many who have expressed a desire to have an electronic copy of the document, then the PDF you download and install on your hard drive will fit that bill. In addition to having an index, as does the hardcopy, the electronic version is searchable.

It is currently expected, barring unforseen difficulties in producing the paper copy, we will have the hard-copy available for distribution at the 5 November meeting. Remote members unable to attend will be mailed their copies. With an eye to conserving SCAMIT resources we will only mail copies out after we have determined that they cannot be reasonably distributed by hand.

It has taken a long time to produce this edition which incorporates all of the accepted changes resulting from the complete Taxonomic Atlas series, and from the Coan, Valentich Scott and Bernard bivalve monograph. Many thanks to all those members who assisted in its completion. Hope you find it as useful as the last. If you didn't quite get the voucher sheet done on a new provisional, there will be a fifth edition down the line, so work on those sheets! Non-members desiring a hard-copy will have to join to get one. There will be no distribution of bound copies other than to members. Non-members can, of course, avail themselves of the PDF. New members will receive their copy as they join.

SUPPORT YOUR LOCAL CODE

Every taxonomist knows that support for all aspects of taxonomy is either already dwindling or in jeopardy. Most of us tend to take the most basic aspects of our discipline for granted; the taxonomic code within which we operate and the organization supporting that code, the International Commission on Zoological Nomenclature (ICZN).

One of the major sources of income for the Commission and its operations is the American Association for Zoological Nomenclature. SCAMIT members might consider adding their bit to the struggle to keep the ICZN operating, interpreting the code, and rendering rulings. Membership in the AAZN provides just that. Member Tom Parker provided the following information on joining: "Membership in the American Association For Zoological Nomenclature is open to those interested in supporting taxonomy and the International Commission on Zoological Nomenclature (ICZN). ICZN publishes the taxonomic code (now in its new fourth edition) and sets the framework for zoological taxonomy to function.

AAZN dues are 20 dollars per year (10 dollars for students). AAZN distributes a brief newsletter, is about to post a web site, and is the 2nd largest financial supporter for the ICZN. Members receive discounts on the ICZN code and the other 4 publications of the ICZN. Send membership requests to:

David G. Smith
Treasurer, AAZN
MRC-159
National Museum of Natural History
Washington D.C. 20560-159"

MEIOFAUNAL FORUM

A new internet forum for consideration of all aspects of meiofauna has recently become available. Dr. Cassian Edwards of London University has launched this, and invites all interested parties to join in information exchange about this habitat and the organisms that occupy it. You will find the webpage at:

http://pub82.ezboard.com/
bthemeiofaunacommunity

There are some commercial banners on the page, I assume placed there by the ISP being used, but they are not overly intrusive. Once you exit the page there is a hidden pop-up urging you to gamble, but that disappears quietly when closed. So far there has not been much use of the forum. If the subject interests you, hop in and start a thread.

OLEG KUSSAKIN

Another of the towering figures of arthropod taxonomy has fallen. Dr. Oleg Kussakin, one of the top isopod taxonomists in the world, died August 21st of a spinal infection. In his 71 years Dr. Kussakin accomplished much, his magnum opus probably being the 5 volume treatment of the isopods of the North Pacific. The last volume of this was completed prior to his death and is currently being readied for publication in 2002. While he specialized in isopod taxonomy, his research covered a wider territory. We will continue to benefit from his work in the publications he left behind, but he will be missed. Those, like myself, who never met him in person have missed our chance.

PROPOSED CRUSTACEAN SERIES

Dr. Michel Hendrickx distributed the following on the CrustL list-server. I've reproduced it as he presented it, in the hopes that it may reach interested parties.

"The first issue of a series of volumes on marine crustaceans from the east Pacific is being prepared for publication in 2002 (before June). The book will follow the format of individual contributions (one or several authors) related to any aspect (biology, taxonomy, fishery ...) of benthic and pelagic crustaceans, including synthesis or review papers. Contributions in Spanish or English will be accepted. Each contribution will be reviewed by 1-2 referees to check for quality. However, the main objective of this series of books is to make available regional contributions as well as to rescue original and valuable information which has never been published in "tough" journals, like data in reports or a thesis. Hence, criteria for accepting contributions will be softer than in major journals although care will be taken to provide a top quality to format and edition; in particular, style and correct use of language will be strictly examined. More specific criteria regarding style and format will be available in September; format will be similar to the MUSORSTOM reports published by the Paris Museum. There will be a page charge of 15 US$ per page in order to pay part of the printing. Each issue will have 500 copies. Authors will be allowed to buy issues at cost and will receive 25 free reprints (extra reprints will be at cost). The editor will be Michel E. Hendrickx (Unidad Academica Mazatlan, UNAM, Mazatlan, Mexico) but an English co-editor will assist if necessary. With a view to evaluate the regional potential of such a series, please let me know of your interest to

contribute to the first issue (a volume will be published every year) before the 15 of September at one of the following e-mails:
michel@mar.icmyl.unam.mx
michel@ola.icmyl.unam.mx
Please include the following data:
Author(s)
Affiliation and institution address (mail and e-mail)
Titulo provisional de la contribucion.
Number of pages (aprox.) of contribution (MS, double space, including figures and tables)
Minimum and maximum dates for submitting the MS.
Availability of PC equipment to send and receive electronic files.
A second and final evaluation will be made in September 2001. At present 10 potential contributions are enlisted.
Michel E. HENDRICKX
Laboratorio de Invertebrados Bentonicos
Estacion Mazatlan, ICMyL UNAM
tel. 52 (6) 985-28-45,-46,-47,-48 Apartado Postal 811 fax. 52 (6) 982-61-33
Mazatlan, Sinaloa 82000 MEXICO

JOBS!!!

SCAMIT members who have stuck it out long enough to get a PhD are in the minority, but you are out there. The listing below was forwarded by Larry Lovell for those who qualify...
Invertebrate Zoologist, Georgia College & State University: The Department of Biological & Environmental Sciences of Georgia College & State University invites applications for a tenure-track appointment as Assistant or Associate Professor of Biology in the field of invertebrate zoology. The position entails teaching introductory biology, upper division and graduate (M.S.) courses in invertebrate zoology, and other subjects related to one's specialty. Tenure and promotion at GC&SU are based on effective teaching, scholarship in one's discipline, and university/community service. A Ph.D. in biology or zoology is required for appointment. Appointment rank and salary will be commensurate with qualifications and experience. Applications will be reviewed beginning in November 2001 and will continue until the position is filled. The starting date is August 2002.

THE DEPARTMENT. The Department of Biological & Environmental Sciences and the Dept. of Chemistry & Physics share a newly renovated building. Biological & Environmental Sciences offers a broad spectrum of courses in all branches of biology as well as geology and paleontology, and grants degrees at the B.S. and M.S. level. There are presently 14 faculty members, and 4 more to be added in fall 2002. The department enrolls about 215 undergraduate biology majors and 30 graduate students. The department is especially strong in field biology, evolutionary biology, and paleontology. For further information see

www.gcsu.edu.acad_affairs/coll_artsci/bioenv.sci/

THE UNIVERSITY. Georgia College & State University is Georgia's designated public liberal arts university (a COPLAC institution), with a strong commitment to student-centered education in a residential setting. The faculty, staff, and students of the university value and encourage high academic standards; lifelong learning; critical, independent and creative thinking; strong verbal and written communication skills; an appreciation of culture; and a global perspective. The university has an enrollment of approximately 5,200 students with a full range of student activities and athletic programs. The university is located in Milledgeville, Georgia, a community of 38,000 within easy reach of Atlanta, Macon, and Athens. Nearby Lakes Oconee and Sinclair provide many public recreational opportunities. GC&SU is an Equal Opportunity/Affirmative Action institution of the University System of Georgia.

APPLICATION PROCEDURE. Preliminary inquiries may be sent to the search committee chair at ksaladin@mail.gcsu.edu. Formal applications must be submitted by mail. Send a letter of application, curriculum vitae, copies of transcripts for all earned degrees, and the names, addresses, and telephone numbers of three references to the search committee chair below.
Official transcripts will be required only of candidates selected for interviews.
Kenneth S. Saladin, Ph.D.

Invertebrate Zoology Search Committee
Dept. of Biological & Environmental Sciences, Box 81
Georgia College & State University
Milledgeville, GA 31061-0490

VOUCHER SHEETS!

Attached the reader will find Provisional Voucher Sheets on Lumbrinerids provided by member Larry Lovell.

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Volumes 1 - 4 (compilation)..... $ 30.00
Volumes 5 - 7 (compilation)..... $ 15.00
Volumes 8 - 15 ..... $ 20.00/vol.

Single back issues are also available at cost.

SCAMIT Provisional Species Voucher Sheet

PROVISIONAL NAME: *Lumbrineris* sp. E
TAXON: Annelida, Eunicida, Lumbrineridae

SCAMIT CODE: none

DATE EXAMINED: 12 March 2001
VOUCHER BY: Larry Lovell & Kelvin Barwick

SYNONYMY: *Lumbrineris* nr. *limicola* (used during SCAMIT meeting presentation 12 March 2001)

DIAGNOSTIC CHARACTERS:

1. Composite hooded hooks present, begin setiger 1.
2. Yellow acicula.
3. Median parapodia with pre- and post-setal lobes, pre-setal lobes shorter than setae, post-setal lobes equal to length of setae. (See Fig. 1)
4. Posterior parapodia with pre-setal lobes absent, post-setal lobes rounded at tip, shorter than length of setae. (See Fig. 2)

RELATED SPECIES AND CHARACTER DIFFERENCES:

1. *Lumbrineris cruzensis*: pre- and post-setal lobes prolonged in median and posterior segments.
2. *Lumbrineris latreilli*: pre-setal lobes absent and post-setal lobes short, blunt with rounded lobe in median segments.
3. *Lumbrineris limicola*: post-setal lobes in posterior segments prolonged extending beyond the length of the setae.

DEPTH RANGE: 44-80 m (sediment: 10 – 36% fine sand)

DISTRIBUTION: Northern Channel Islands.

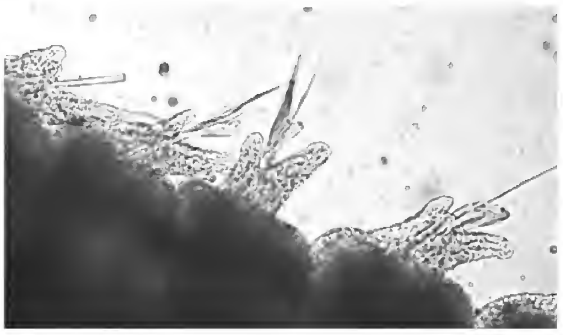

Figure 1. Anterior segments.

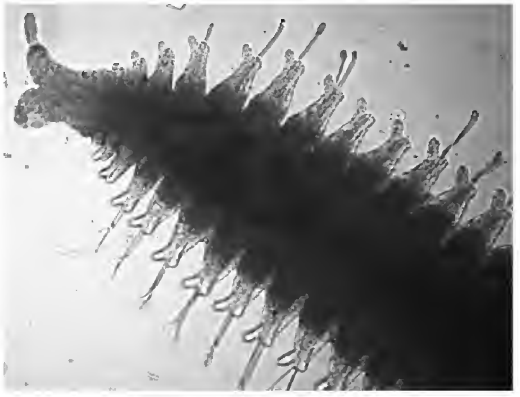

Figure 2. Posterior segments.

SCAMIT Provisional Species Voucher Sheet

PROVISIONAL NAME: *Scoletoma* sp. A
TAXON: Annelida, Eunicida, Lumbrineridae

SCAMIT CODE: none

DATE EXAMINED: 12 March 2001
VOUCHER BY: Larry Lovell & Kelvin Barwick

SYNONYMY: *Lumbrineris* sp. A of Harris 1985

DIAGNOSTIC CHARACTERS:

1. Slender body with pointed prostomium, with sensory tip. (See Fig. 1)
2. Simple, multidentate hooks begin setigers 4-9, usually 6-8.
3. Acicula yellow.
4. Parapodia with only post-setal lobes prolonged in posterior segments. Post-setal lobes extend beyond setae. (See Figs. 2 & 3)

RELATED SPECIES AND CHARACTER DIFFERENCES:

1. *Scoletoma luti*: simple, multidentate hooks begin on setiger 1; posterior segments with prolonged post-setal lobes equal to length of setae.
2. *Scoletoma tetraura*: simple, multidentate hooks begin on setiger 1; post-setal lobes slightly prolonged, digitate pointed upward, body robust.
3. *Scoletoma* sp. B: posterior segments with prolonged pre- and post-setal lobes, pre- equal to the length of setae, post- extend beyond setae.
4. *Scoletoma* sp. C: prostomium without sensory tip; simple, multidentate hooks begin on setiger 1; posterior segments with prolonged pre- and post-setal lobes shorter than setae.
5. *Scoletoma minima*: simple, multidentate hooks begin on setiger 13 or later. Note: *Lumbrineris* sp. C of Harris 1985 was erected from paratype material of *S. minima* based on the difference in where the hooks start. The validity of *S. minima* has not been verified with non-holotype material.

DEPTH RANGE: 3-30 m

DISTRIBUTION: Southern California bays, harbors, coastal areas in fine, muddy sediments.

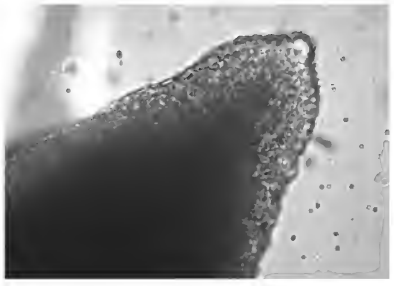

Figure 1. Prostomium.

Figure 2. Median segments.

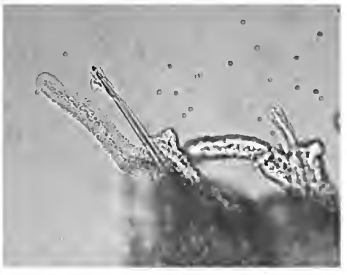

Figure 3. Posterior segments.

SCAMIT Provisional Species Voucher Sheet

PROVISIONAL NAME: *Scoletoma* sp. B
TAXON: Annelida, Eunicida, Lumbrineridae

SCAMIT CODE: none

DATE EXAMINED: 12 March 2001
VOUCHER BY: Larry Lovell & Kelvin Barwick

SYNONYMY: *Lumbrineris* sp. B of Harris 1985

DIAGNOSTIC CHARACTERS:

1. Slender body with pointed prostomium, with sensory tip. (See Fig. 1)
2. Simple, multidentate hooks begin setigers 4-9, usually 6-8.
3. Acicula yellow.
4. Parapodia develop prolonged pre- and post-setal lobes in median and posterior segments. Pre-setal lobes equal length of the setae, post-setal lobes extend beyond the length of the setae. (See Figs. 2 & 3)

RELATED SPECIES AND CHARACTER DIFFERENCES:

1. *Scoletoma luti*: simple, multidentate hooks begin on setiger 1; prolonged post-setal lobes in posterior segments equal to the length of the setae.
2. *Scoletoma tetraura*: simple, multidentate hooks begin on setiger 1; post-setal lobes slightly prolonged, digitate pointed upward, body robust.
3. *Scoletoma* sp. A: posterior segments with only post-setal lobes prolonged, extending beyond the length of the setae.
4. *Scoletoma* sp. C: prostomium without sensory tip; simple, multidentate hooks begin on setiger 1; posterior segments with prolonged pre- and post-setal lobes, both shorter than the length of the setae.
5. *Scoletoma minima*: simple, multidentate hooks begin on setiger 13 or later. Note: *Lumbrineris* sp. C of Harris 1985 was erected from paratype material of *S. minima* based on the difference in where the hooks start. The validity of *S. minima* has not been verified with additional non-holotype material.

DEPTH RANGE: 3-30 m

DISTRIBUTION: Southern California bays, harbors, coastal areas in fine, muddy sediments.

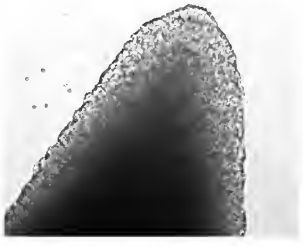

Figure 1. Prostomium.

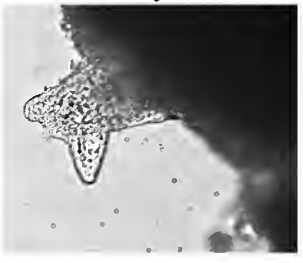

Figure 2. Median Segments.

Figure 3. Posterior Segments.

SCAMIT Provisional Species Voucher Sheet

PROVISIONAL NAME: *Scoletoma* sp. C
TAXON: Annelida, Eunicida, Lumbrineridae

SCAMIT CODE: none

DATE EXAMINED: 12 March 2001
VOUCHER BY: Larry Lovell & Kelvin Barwick

SYNONYMY: *Lumbrineris* sp. C of Harris 1985

DIAGNOSTIC CHARACTERS:

1. Slender body with rounded prostomium, without sensory tip. (See Fig. 1)
2. Simple, multidentate hooks begin setiger 1.
3. Acicula yellow.
4. Parapodia develop prolonged pre- and post-setal lobes in posterior segments. Pre- and post-setal lobes equal to length of setae. (See Fig. 2)

RELATED SPECIES AND CHARACTER DIFFERENCES:

1. *Scoletoma luti*: simple, multidentate hooks begin on setiger 1; posterior segments with prolonged post-setal lobes extending beyond the setae.
2. *Scoletoma tetraura*: simple, multidentate hooks begin on setiger 1; post-setal lobes slightly prolonged, digitate pointed upward, body robust.
3. *Scoletoma* sp. A: prostomium pointed with sensory tip; simple, multidentate hooks begin on setiger 4-9; posterior segments with prolonged post-setal lobes extending beyond the setae.
4. *Scoletoma* sp. B: posterior segments with prolonged pre- and post-setal lobes, pre- equal to length of setae, post- extend beyond the setae.
5. *Scoletoma minima*: simple, multidentate hooks begin on setiger 13 or later. Note: *Lumbrineris* sp. C of Harris 1985 was erected from paratype material of *S. minima* based on the difference in where the hooks start. The validity of *S. minima* has not been verified with additional non-holotype material.

DEPTH RANGE: 3-6 m

DISTRIBUTION: Southern California bays and harbors in fine, muddy sediments.

Figure 1. Prostomium.

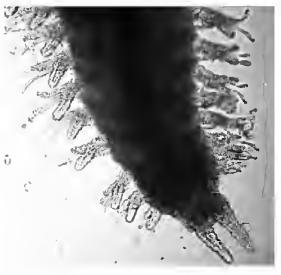

Figure 2. Posterior segments.

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

August, 2001

SCAMIT Newsletter

Vol. 20, No. 4

SUBJECT: There will be no meeting in December

GUEST SPEAKER:

DATE:

TIME:

LOCATION:

Pionosyllis sp SD2
Anterior dorsal view showing everted proboscis
ITP I-7 rep2 2Jan2001 165 ft.
RCR - 30May2001

NOTE: Your editor is playing catch up again, so for the next several newsletters the meeting information will be correct, regardless of the labeled date of the newsletter.

NEW LITERATURE

Measurement of community attributes has been the traditional way of examining the health, well-being, and structure of communities. Just which attributes are most useful has long been a subject of debate (and rightly so). New indices, and reductive analyses of communities are often proposed to correct the deficiencies identified in existing ones, or address an aspect of the community not previously considered. Clarke and Warwick (2001) add a twist to the examination of an index of biodiversity proposed in recent years, taxonomic distinctness. They propose examination of variation in taxonomic distinctness between all possible pairs of species in a study. The result is an expression of the mean path length through the taxonomic tree which relates these

FUNDS FOR THIS PUBLICATION PROVIDED, IN PART BY
THE ARCO FOUNDATION, CHEVRON, USA, AND TEXACO INC.
SCAMIT Newsletter is not deemed to be valid publication for formal taxonomic purposes.

community members. Application of this measure, and of the allied measure which describes the average taxonomic distinctness of a collection, seems to provide a new view. The authors find it sensitive enough to pick out impacted communities of nematodes in polluted areas, and an exceptionally pristine area. In each case this is facilitated by the ability to use the list of taxa known to occur to produce a baseline expectation for the average and variation data. One of the major advantages of this particular pair of indices is that they are quite insensitive to differences in sample size and taxonomic adequacy. In this respect it is an improvement on other measures of biodiversity such as richness and species diversity, and even species number. Another view of the biodiversity issue is provided by the taxonomic similarity index (Izsak & Price 2001). This seems to have applications in comparisons at several different geographic scales.

All POTW programs permitted in California have some sort of assessment of chemical contamination of the sediments and biota. Those which are classified as large POTW's usually have both, and have added bioassay responsibilities. Inherent in all these efforts is the concept that "pollutants" are introduced with the wastestream, or form in sea-water as a result of the introduction of the wastestream. A recent article by Fielman et al. (2001) points out that man is not the only manipulator of his chemical milieu. They report on studies of several species of polychaetes, some of which are viewed as indicator species, and/or are used in bioassays of effluent or receiving water quality. They found many species capable of synthesizing halogenated organic compounds as offensive molecules to use in competitions for space with other benthic inhabitants. A number of the compounds they found, produced naturally by the worms, are usually considered pollutants introduced with wastewater, or compounds formed by residual chlorine in sea-water following effluent chlorination/dechlorination. It is essential that this information come to the attention of toxicologists and environmental chemists so that they can adjust their world view to accomodate the production of such molecules by receiving water organisms under natural conditions, not just by man as a result of his activities.

Small snails of the genus *Tryonia* are not usually found in POTW monitoring but they may occur in bays and estuaries which receive freshwater runoff. During work in upper Newport Bay a number of years ago a species in this genus proved difficult for the taxonomists involved. At that time the only document available which clearly described the animal was a draft put together by Dr. Dwight Taylor in the process of seeking endangered species listing for *Tryonia imitator*. Most members of the genus are freshwater, but we have a brackish water representative in Central and Southern California, the aforementioned *T. imitator*. Finally a good thorough work on this genus has become available. Hershler (2001) describes both the shell and soft-part morphology of all the species in the genus, including *T. imitator*. Those struggling with this taxon in embayment samples can heave a sigh of relief. Help is at hand.

With complexes of outwardly similar species within a single genus, the question of interbreeding/hybridization usually lurks somewhere in the background. It has been shown to exist in several cases locally with abalone and mussels . Both of these are broadcast spawners. The question of hybridization in groups where gametes are not released freely into the water column becomes more difficult to address as there may be behavioral boundaries to cross-fertilization. Ariani & Whittmann (2000) consider several species in the mysid genus *Diamysis* in the Mediterranean, some of which were reputed to have wide geographic distributions and occupy waters ranging from nearly fresh to fully salt. Their analysis showed several of the populations previously interpreted as belonging

to one wide ranging species were non-interbreeding and formed separate, reproductively isolated taxa. Once this was verified, additional attention to morphological detail showed that there were other differences previously written off as character variability that separated these non-interbreeding entities. Some of these were parapatric, and were deemed separable at the subspecific level only. Their distinctness was maintained by physiological tolerances and behavior relative to salinity which kept geographically overlapping populations separated along a secondary gradient of salinity. Were this salinity gradient to be disrupted, and the isolated subspecies reproductively united, they could successfully interbreed; thus their separation at subspecific level only.

WHAT ARE SPECIES?

Like the proverbial blind men who attempt to describe an elephant by each touching a different part, we have all struggled to know what characteristics define a species. Touching just the organism morphology only partially provides for a valid species concept. Touching the genetics, or molecular marker may appear to have final resolution but may be weakened by difficulty in widespread application. Taxonomy has always provided scientific names and hierarchy for the organisms studied by ecologists and physiologists. The use of taxonomic information in the high cost operations and legal issues surrounding programs of bioassay, habitat resource, endangered species, pharmaceutical discovery, and international importation, have made taxonomic validity ever more critical. Though some biologists may consider a species as any organisms that successfully reproduce fertile offspring, several other concepts have been developed. In the book, Species: The Units of Biodiversity, Claridge et al (1997) bring together authors to review and explore the important details underpinning these various species concepts.

A reader may explore the variety of concepts used for virus, bacteria, fungi (sexual, asexual, and sterile), lichens, algae, higher plants, insects, birds and mammals. It is clear a species concept that functions appropriately for bacteria or for parasitic insects, may not be very useful when applied to lichen or mammals. A grand unifying theory of the universe, physics, or matter, may be achievable, but a grand unifying theory of The Species seems beyond reach.

The 10th chapter entitled: “Species of marine invertebrates: a comparison of biological and phylogenetic species concepts” might be a good place for careful reading. The authors point out that morphological methods of species determination greatly underestimate biodiversity and that both biological or phylogenetic concepts must be carefully applied to prevent unreliable measures of biodiversity. Jumping to chapter 18 a reader can review: “The ideal species concept-and why we can’t get it”(hint: does “one size fit all” ever fit all?). The last chapter: “A hierarchy of species concepts: the denouement in the saga of the species problem” provides a broad review of the numerous species concepts and produces a hierarchy chart to link and order these diverse ideas.

For those SCAMIT newsletter readers who think that erecting another provisional species name, discovering an improperly described holotype, or trying to straighten out some nomenclatural tangle, is the source of much taxonomic confusion; consider that at least 22 different species concepts are used today. When these concepts are compared to each other, many of them provide contrasting biodiversity measures! This book’s collection provides an excellent review of species concepts. - Tom Parker (CSDLAC)

RESTRICTING COSMOPOLITAN POLYCHAETES

In 1988 Hutchings and Glasby wrote that cosmopolitan listings of *Loimia medusa* are unreliable and transferred all Australian records to *L. batilla* Hutchings and Glasby 1988. They additionally described that multi-row arrangements of uncinal teeth are found in some juveniles and adults. They recommend that uncinal structure is of limited specific character value. Instead they rely upon the structure of the lateral lobes for diagnosis. Hutchings and Glasby published a redescription of *Loimia medusa* in 1995. No type specimen exists for *L. medusa* and they designated, described, and illustrated a neotype.

The SCAMIT newsletter in 1997 (Vol 16, No. 6) carried a brief review of their publication and suggested that local California records of *L. medusa* were an error of nomenclature. In Volume 7 of the MMS Taxonomic Atlas, Hilbig produced a description of *L. medusa* but suggested that California records may eventually belong to a new or different species. When SCAMIT members met to review this volume they opted not to follow her lead. The provisional voucher sheet issued here is constructed to include local specimens formerly identified as *L. medusa.* The new designation is *Loimia* sp A SCAMIT 2001. This designation has replaced the *Loimia medusa* listing in the 4th Edition of the SCAMIT Taxonomic List.

This current nomenclatural change considers species in the genus *Loimia* to have relatively limited, rather than international, geographic distributions. These species are difficult to distinguish due to their few obvious structural differences and a long history of listing many *Loimia* specimens within the brief original description of *L. medusa*. There is also a general suspicion among many polychaete workers about the validity of *L. medusa* records from greatly distant locations such as Australia, the Red Sea, the Philippines, and California.

Staining pattern descriptions are limited to Hilbig's notation and those provided on the voucher sheet in this issue (see attachment). Hilbig's staining results include: solid green stain on first lappets, a green with blue margin stain on second lappets, thorax deeply staining blue cells, deep blue staining transverse row along the side of first 8 neuropodia, no abdominal stain, and anal papillae stain dark green.

Loimia is an ecologically important polychaete. *Loimia* populations have been noted as tube-irrigating polychaetes that significantly increase benthic oxygen consumption and the release of ammonium and nitrate from sediments. It was demonstrated (Mayer 1992) that *Loimia* can stimulate nitrification and denitrification. Worm respiration and excretion can make a >50% impact upon sediment-water fluxes of oxygen. The general impact of such tubicolous animals introducing oxygen to subsurface sediments stimulates the nitrifying bacteria and gives these tube zones 2-200 times more potential for nitrification. - Tom Parker (CSDLAC).

ICC5

The fifth international crustacean meeting was held last month in Australia. A number of local workers attended. The following précis was prepared by member Todd Haney (NHMLAC) with contributions by Lisa Haney (CSDLAC) and Jody Martin (NHMLAC)

"The Fifth International Crustacean Congress was held in Melbourne, Australia, from 9-13 July, 2001. By all accounts, the Congress was a tremendous success, and the organizer, Dr. Gary C. B. Poore, and his capable staff were the perfect hosts. The Congress commenced with introductory remarks by Dr. Poore

followed by the official opening by Mr. John Landry MBE, Governor of Victoria. Participants, numbering close to 280, represented 43 different countries and presented 330 talks and posters. Plenary papers were given by Tim O'Hara, Kenneth Soderhall, Philip Rainbow, Geoffrey Boxshall, and Jim Lowry. Special symposia and general topics were divided among categories such as Burrowing Crustaceans, Symbiosis, Vitellogenesis and Gametes, Fisheries and Aquaculture, Systematic Methods, Disease Defences and Parasites, Phylogeny of the Peracarida, Growth and Aging, Systematics of the Anomura, Feeding, Higher Crustacean Systematics, Cryptic Species, and more.

Of the 29 registered participants from the United States, nine biologists attended from southern California. Dr. Michel Boudrias (University of San Diego) presented research on crustacean locomotion, with one talk on the burrowing behavior of a vernal pool ostracod and another presentation on the generation of thrust by limbs of an amphipod. Dr. Ju-shey Ho (Cailifornia State University Long Beach) presented his research on copepod parasites, with emphasis on an invasive species found on fishes in Japanese waters. From the Crustacea laboratory of Natural History Museum of Los Angeles County, presentations were made by Joel Martin, Sarah Boyce, Todd Haney, Sandra Trautwein and Regina Wetzer. These talks included research on the: collection of coral reef Crustacea, updated classification of Crustacea, molecular phylogeny of calappid crabs, leptostracans of the West Coast, morphology of whale-lice, molecular systematics of xanthid crabs, and genetic diversity in phreatoicidean isopods. The talks are available on-line at:

http://204.140.246.70/presentations/ICC5/

The Congress was also attended by Lisa Haney (Los Angeles County Sanitation District), whose primary interests include the taxonomy and ecology of peracarid Crustacea, and Dean Pentcheff (San Pedro), whose interests in Crustacea stem partly from the broader theme of marine biomechanics.

The Congress concluded with an elegant banquet and dancing at the historic Melbourne Plaza Ballroom. Altogether, the Congress proved to be a great success in terms of the atmosphere that was fostered for the free exchange of ideas and research on the many fronts of crustacean biology. Glasgow, Scotland was put forward as a prospective venue for the Sixth International Crustacean Congress."

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Fax number: (213) 747-0204

20 AUGUST MEETING MINUTES

The meeting began with president Ron Velarde reminding attendees of upcoming meetings. The Western Society of Naturalists will be convening their 82nd annual meeting from November 9-12, 2001 at the Ventura Beach Hotel in Ventura, CA.

The Western Society of Malacologists will be holding their 2002 meeting in Monterey at the Asilomar Conference Center from 20-24 July. For more details see the August edition of the Festivus.

The City of San Diego has published, thanks to the hard work and dedication of member Dean Pasko, a report titled, "City of San Diego Marine Biology Laboratory Contributions to Taxonomy 1999 - 2000". In it are voucher sheets, ID sheets, works in progress, etc.

produced by the taxonomy group for the years mentioned. In addition there is a section on presentations and publications as well as other contributions. Only a limited number of the reports were produced but copies may be available at cost if requested. Contact Dean Pasko at: dpasko@sdcity.gov.

Member Tony Phillips (CLA-EMD) announced that their lab had moved to a new building (the next one over) and to be sure to look for them in the new spot if visiting. After years of waiting they are now finally installed in new quarters with a magnificent view of the waves breaking on the beach at Playa del Rey (Dockweiler Beach). Similar moves are ahead for the Pt. Loma Lab, and for the CSDLAC Lab, but neither building will be ready for some time.

Member Larry Lovell (SIO) then discussed his trip to Iceland for the Polychaete Conference. The first two days consisted of presentations and posters and the third day was a "mid-conference" break during which the participants were taken on a wonderful tour of some of the rugged and beautiful terrain of Iceland. Larry spoke of huge, four-wheel drive buses that had high clearance and were used for fording swift, relatively deep rivers. For the fourth and fifth days the talks and posters were resumed. Larry said that he had a great time and enjoyed Iceland immensely. The 2004 polychaete meeting will be held in Madrid, Spain the 1st week of July.

Next up was Don Cadien (CSDLA) who had just participated in a nudibranch survey that that morning on Point Loma. This was a summer census of the Cabrillo National Monument area at the tip of Pt. Loma to complement the winter survey of the same area performed earlier in the year. It was arranged through the auspices of Bonny Becker and included her, Jim Lance, and Don Cadien. As expected, the species list was both longer than in the winter, and shorter than in past years. Only a small number of opisthobranch specimens were observed in areas teeming with them a decade earlier. This decline parallels declines up and down the west coast of North America in recent years.

With the open forum concluded it was time to move on to the heart of the meeting which was Rick Rowe's (CSD) thought provoking talk on Managing Taxonomic Data. Rick started the meeting with addressing the obvious benefits if the POTW labs, or their contract agencies, as well as some of the museums in Southern California, were to be able to swiftly and efficiently share taxonomic information through a central database that was accessible to participating taxonomists/members. He reviewed the current situation, which is everyone using different programs and different systems with information being distributed via paper voucher sheets somewhat haphazardly. Granted, SCAMIT has done much in the last 20 years to standardize the taxonomy of the participating taxonomists in the Southern California Bight and beyond, and our web-site with its Taxonomic Tools Section has also helped the speed with which the information is distributed, but this concept of a central, interactive library, could take it much further.

After Rick's presentation, the meeting quickly became an open discussion and many ideas were tossed out and problems addressed regarding the hurdles inherent in such a project. Dave Montagne (CSDLA) reviewed the system currently in use by his lab and discussed its different features. He also brought up many interesting points in terms of management difficulties and other feasibility issues. There are many software packages that are designed specifically for managing taxonomic data and Rick reviewed a few of these in his presentation. By the end of the day we had tentatively outlined the philosophy behind the database in terms of what information would be entered/included and how it would be used. Examine the attachment provided at the end of this newsletter which

was distributed during the meeting. It provides links for further information on the subject of taxonomic databases. Our initial intent to meet again in December has been modified to allow circulation and evaluation of new programs now in the works. The next meeting on this topic will be in the early portion of 2002, when we will refine our expectations of the database and start to discuss which software package would be the best for our needs

FILM AT 11

The third (and probably final) field season at Guana Island in the British Virgin Islands took place during the month of July. This was Marine Science Month in Guana this year, and several team members were there the entire month. Don Cadien was there for three weeks this year, but the work load was a bit less intense than in previous years. The emphasis this year was not on additional collections, but local interface. Four students from the local college, Labade Stout Jr. College on the adjacent island of Tortola, worked for the entire month on projects with the team from the Natural History Museum of Los Angeles County headed by Todd Zimmerman. The team this year included Dr. Jody Martin (Curator of Crustacea), Dr. Gordon Hendler (Curator of Echinoderms, and head of Collections), Dr. Kirk Fitzhugh (Curator of Worms), Todd Haney, Rick Ware, and Don Cadien. Leslie Harris, a fixture of these efforts since their inception, was laid up with a bad back and could not participate. Direction and assistance in the student projects absorbed a good deal of time. There was feedback, however, and the students assisted with such activities as the continuing faunal characterization and eelgrass mapping. Other student groups also participated for shorter intervals. A symposium was held presenting results of the Guana studies. Todd Zimmerman gave a description of the program and it's methods, Don Cadien reprised some of the peracarids taken so far, and Rick Ware discussed the seagrass beds around the island. Other presentations dealt with goby/parasite population dynamics, the student projects, salt-pond evolution and ecology, and efforts to persuade the Guana resident flamingos to reproduce.

Activities of the group were documented this year by photojournalists associated with the Natural History Museum. A program on the work was televised on National Geographic Explorer in August. Further film coverage is expected later on PBS. A display relating to the work has been prepared in the museum, and a full-page article in the Los Angeles Times also sought to bring the project to a wider audience. Despite all this related activity some additional collections were made this year. In Leslie's absence Don was tasked with microphotography, but took few pictures. Live processing of the collected samples occupied most of his time. Old friends were relocated again, including the undescribed shallow water aplacophore taken last year and now being worked on by Amalie Scheltema. A single specimen of a cephalocarid crustacean was taken. A manuscript on this animal has already been prepared for submission by Jody Martin. A number of other interesting finds were also made, including additional specimens of new polychaetes taken last year by Kirk Fitzhugh.

Gordon Hendler spent a good deal of time in experimental work with ophiuroids. He also was excited to report additional specimens, some videotaped, of a swimming ophiuroid. This small undescribed species is in the same genus as our local *Ophiuroconis bispinosa*, which will soon be transferred to a new genus in another family. Anyone with access to living specimens of the local species please contact Dr. Hendler. He is anxious to observe and document the swimming behavior of the local species too (if it does swim like it's Carribbean relative). The Guana animal was taken in 50-60 feet of water, while our local species is normally found deeper and taken by remote grabs.

Those interested in learning more about the project, or viewing some of the many organisms whose living appearance has been documented so far can visit the project website at

http://www.nhm.org/~tzimmerm/bvi_800/0bvi-idx.htm

JOB ANNOUNCEMENTS

(the following is a copy of an email sent to a co-worker)
Onsite Environmental has three open positions with an environmental consulting firm here in Sacramento. The positions are **all mid to senior level positions** in the biology field. Below is an attachment for each position: 1) Wildlife Biologist; 2)Wetland Scientist; and 3) Fisheries Biologist.

Job Description for a Wildlife Biologist
Job ID #: 132321
Date Opened: 07/25/2001
Location: Sacramento, California
Title: Wildlife Biologist
Skills: Oral & Written Communication

Job Description:
One of California's foremost planning and resource management firms, is in immediate need of a Mid to Senior level Wildlife Biologist Project Manager. This company specialize in the following services: CEQA & NEPA, Urban Planning & Design, Livable Communities, Geographic Information Systems, Biological Resources, Mitigation & Construction Monitoring, Water Resources, Air Quality & Noise Assessment, and Environmental Services for Life Sciences Facilities.

The Candidate will be responsible for the management and preparation of technical studies and technical analyses for environmental assessments, management plans, and various other environmental studies. The responsibilities for this position will include study protocol design and negotiation, data collection and analysis, report and proposal writing, project / task management, and client / agency interaction.

Candidate should have a B.A. / B.S. in biological sciences. Candidate must have a minimum of five (5) years of relevant post-degree experience. Professional experience with terrestrial wildlife, including mammals, amphibians, birds, reptiles and / or plants, California and / or Great Basin threatened and endangered species experience is preferred. Experience with environmental assessments and endangered species studies and consultation with the California Department of Fish and Game and US Fish and / or Wildlife Service is highly desirable. Experience in design, protocol negotiations, and conduct of large and small field surveys is also preferred. Candidate must have excellent oral and written communication and have the ability to travel and conduct fieldwork. Key qualities for the successful candidate, beyond technical expertise, include self-motivation, initiative, and the ability to work well in a diverse team environment.

Job Description for a Wetlands Scientist
Job ID #: 132290
Date Opened: 07/25/2001
Location: Sacramento, California
Title: Wetland Scientist
Skills: Oral & Written Communication

Job Description:
One of California's foremost planning and resource management firms, is in immediate need of a Mid to Senior level Wetland Scientist Project Manager. This company specialize in the following services: CEQA & NEPA, Urban Planning & Design, Livable Communities, Geographic Information Systems, Biological Resources, Mitigation & Construction Monitoring, Water Resources, Air Quality & Noise Assessment, and Environmental Services for Life Sciences Facilities.

Candidate will manage multiple wetland delineation projects and wetland permitting processes. This position involves management and preparation of technical studies, regulatory permits, and technical analyses for environmental assessment, mitigating and / or restoration plans, monitoring plans, and various other environmental studies. More specifically this position includes study design, data collection & analysis, proposal & report writing, project / task management, and client / agency interaction.

Candidate must have a BA/BS in biological or environmental sciences. Candidate must have a minimum of five (5) years of relevant post-degree experience. Professional experience with wetland habitats and regulatory permitting, including wetland delineation, Section 404 permitting, and related endangered species consultation, California and / or Great Basin threatened and endangered wetland plant and animal species experience is preferred. Experience in conducting large and small wetland delineation and field surveys, and in consultation with the US Army Corps of Engineers, California Department of Fish and Game, and / or US Fish and Wildlife Service is also preferred. The candidate must have excellent oral and written communication skills and experience managing technical work. Candidate must have ability to travel and conduct fieldwork. Key qualities for the successful candidate, beyond technical expertise, includes self-motivation, initiative, and the ability to work well independently and in a diverse team environment.

Job Description for a Fisheries Biologist
Job ID #: 132263
Date Opened: 07/25/2001
Location: Sacramento, California
Title: Fisheries Biologist
Skills: Oral & Written Communication

Job Description:
One of California's foremost planning and resource management firms, is in immediate need of a Mid to Senior level Fisheries Biologist Project Manager. This company specialize in the following services: CEQA & NEPA, Urban Planning & Design, Livable Communities, Geographic Information Systems, Biological Resources, Mitigation & Construction Monitoring, Water Resources, Air Quality & Noise Assessment, and Environmental Services for Life Sciences Facilities.

Daily responsibilities for this position will be to manage Fisheries & Aquatic Ecology projects. More specifically to include study design, data collection & analysis, proposal & report writing, project / task management, and client / agency interaction.

Candidate must have a BA/BS in fisheries or biological sciences. Candidate must have a minimum of five (5) years of relevant post-degree experience. Professional experience with anadromous fish and resident salmonids, West Coast threatened & endangered species experience is preferred. Experience with stream ecology, water quality, environmental assessments and endangered species consultation with the California Department of Fish and Game, US Fish and Wildlife, and/or National Marine Fisheries Service is highly desirable. Experience in conducting stream surveys is also preferred. The candidate must have excellent oral and written communication skills and experience managing technical work. Key qualities for the successful candidate, beyond technical expertise, includes: self-motivation, initiative, and the ability to work well independently and in a diverse team environment.

For immediate consideration and / or more information on the above positions, please send resume via e-mail to marquez@onsite-inc.com or call Marc Marquez at the contact numbers below. Onsite Companies will initially interview all qualified candidates.

Contact Name: Marc Marquez
Phone: (916) 561-4402
Fax: (916) 921-0477
Tollfree (800) 230-0406
Contact e-mail: mmarquez@onsite-inc.com

Last but not least the following was recently posted by Jeff Shields to the CrustL listserver:

From: Carolyn Friedman
<carolynf@u.washington.edu>
Subject: Permanent laboratory technician position open in Bodega Bay

"We have an opening for a senior lab technician. The salary range is $2220-2697/mo (can red line to current salary in the range). The employee would participate in laboratory and field projects dealing with mortalities of wild and cultured marine invertebrates. The employee will also participate in wet lab and general laboratory maintenance, maintaining seawater systems (including the occasional plumbing), interact with the aquaculture community and other duties as required. Candidates with experience in molecular diagnostics, pathogen challenges, and western blot analysis are desired as these are also duties frequently performed in our laboratory. The position will be through the California Department of Fish and Game and will be sited at the Bodega Marine Laboratory. We need to fill this position ASAP.

Interested parties please email me (carolynf@u.washington.edu) or Jim Moore (jimmoore@ucdavis.edu) as soon as you can."

SECRETARIAL NOTE

The Secretary would like to apologize for the error in the Volume number in last month's newsletter (July 2001). The Volume and Number header read, "Vol. **19**, No. 3" when it should indeed have read "Vol. **20**, No. 3". Please forgive my oversight. It has been corrected in the archived records. - M. Lilly

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Please visit the SCAMIT Website at: http://www.scamit.org

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Volumes 1 - 4 (compilation)..... $ 30.00
Volumes 5 - 7 (compilation)..... $ 15.00
Volumes 8 - 15 ..... $ 20.00/vol.

Single back issues are also available at cost.

SCAMIT Provisional Species Voucher Sheet

Loimia sp A SCAMIT 2001

March 2001
Examined by T. Parker, CSDLAC

Literature:

Hutchings, P., C. Glasby. 1988. The Amphitritinae (Polychaeta:Terebellidae) from Australia. Records Australian Museum. (40) 1-60.

Hutchings, P., C. J. Glasby 1995. Description of the widely reported terebellid polychaetes *Loimia medusa* (Savigny) and *Amphitrite rubra* (Risso). Mitt.hamb.zool.Mus.Inst. (92) 149-154.

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Synonymy:

Loimia medusa of SCAMIT Taxonomic List Vol 3. 1998, not *Loimia medusa* (Savigny).

Diagnostic Characters:

1. Lacks prostomial eyespot patches, no red dots on tentacles.
2. First lateral lobe directed anteriorly and ventrally to form thin ventral collar-like structure which recedes mid-line to expose oral opening. No apparent ventral scoop structure.
3. Lobes large and "ear" shaped, with second pair directed anteriorly but more dorsally; giving it a taller, not longer, appearance. See Figure 1.
4. Upper lip extended anteriorly, but mostly hidden by tentacle mass.
5. Notosetae capillaries without wings, or very narrow wings visible only via compound scope. Uncini usually with 5 teeth, each slightly thicker than tooth above. See figures 2 and 3.
6. Pygidium with 7 papillae distributed evenly around anus. See figure 4.
7. Staining: Ventral thorax on setigers 1-7 with strong diffuse stain. Dorsum stains more weakly revealing discrete very small dots. Uncinal base with dark stain around fascicle margin. Some specimens with body/parapodial walls slightly stained in oval pattern just anterior to uncini base. Abdomen unstained.

Distribution: Palos Verdes, California and much of southern California benthos, 30-60 meters in silty sand to silt.

Material examined:

CSDLAC stations: 0792-1C5, 0193-2C, 0795-3C, 0197-0D, 0797-0D, 11-79W-30, 0799-1D, 0100-4D.

SCAMIT Provisional Species Voucher Sheet

Related species and differences:

Loimia triloba: Three pairs of small lateral lobes, lobes apparently from segment 3 and 4 are small, with lobes of segment 4 elongate in shape.

Loimia ochracea: Incomplete specimen in poor condition, lateral lobes small, rounded to semi- spherical. Known only from limited Australian location.

Loimia ingens: Species complex designation without eyespots, 2 pairs of well developed lateral lobes, and a third at junction of segment 2/3. Terminal branchia filaments spiralled. Uncini in adults vary in number from 3-7 vertically arranged teeth. Unpigmented body or with banded tentacles, or mottled brown pigment on thorax and solid brown on ventral pads,

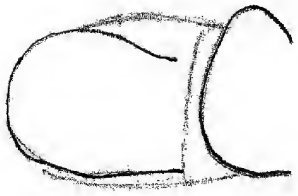
Loimia batilla: Tentacles with thin pigment bands. Eyespots absent. Lateral lobes unite ventrally to form scoop shape structure. Notosetae include thick broad winged structure and slender narrow winged setae. Uncini teeth 5-6 in vertical series.

Loimia medusa: Two small patches of eyespots on prostomium, small red dots on oral tentacles sometimes present, first lateral lobe anteriorly directed and ventrally forming scoop structure, covers base of tentacles, but is reduced at ventral mid-line to expose oral opening. Upper lip projecting anteriorly. Lobes generally "ear" shaped. Notosetae all smooth tipped with narrow wings. 4-5 uncinal teeth in vertical row. Anal papillae absent. Known from sandy/coral rubble in the Red/Iranian Sea. Neotype 32 mm long.

Comments:

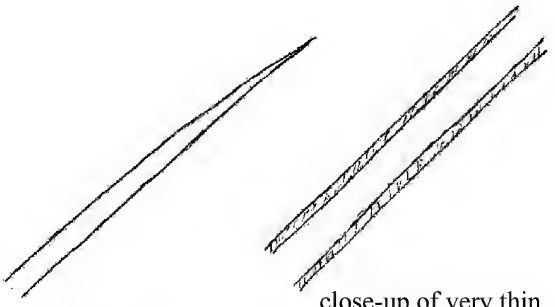
Hutchings and Glasby published a redescription of *Loimia medusa* in 1995 following their descision that Australian specimens recorded as *L. medusa* were misidentified. In 1997 the SCAMIT newsletter (Vol 16, No. 6) carried a brief review of their results and suggested that local records of *L. medusa* were erroneous. In Volume 7 of the MMS Taxonomic Atlas, Hilbig produced a description of *L. medusa* but warned that California records may eventually belong to a new or different species. This voucher sheet designation will replace the *Loimia* listing in the 4th edition of the SCAMIT Taxonomic List. Please see additional comments in this issue of the newsletter.

SCAMIT Provisional Species Voucher Sheet



1st lappet (diagrammatic) 2nd lappet

Figure 1.

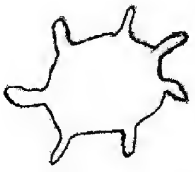


Notosetae close-up of very thin lateral wings

Figure 2.

Thoracic uncini

Figure 3. (after H&G 1988)



Pygidial papillae end-on view

Figure 4.

LINKS to LINKS— Favorite sites for Taxonomic Informatics

(R. Rowe Aug. 2001-updated Nov. 2001)

An Overview of Biodiversity Informatics by Stan Blum (Excellent introductory **SUGGESTED READING**)

http://www.all-species.org/StanBlum.html

BIOLINK - Collections and descriptive information database management software currently under development

http://www.ento.csiro.au/biolink/software.html

DeltaAccess G. Hagedorn Excellent information… most two years old

http://www.bgbm.fu-berlin.de/projects/DeltaAccess/DELTAACCESS_IN.html

DELTA Mike Dallwitz

http://www.biodiversity.uno.edu/delta/

Access to the DELTA software And good source of links to other DELTA programs -

http://www.biodiversity.uno.edu/delta/www/programs.htm

- and articles including the following **SUGGESTED READINGS**:

®Comparing DELTA & LucID M. Dallwitz**.** A look at features of interactive identification programs. Remember that M. Dallwitz is the author of the DELTA format and DELTA software package.

http://www.biodiversity.uno.edu/delta/www/comparison.htm

http://www.biodiversity.uno.edu/delta/www/intluc.htm

and... a response from one of the developers of LucID

http://www.biodiversity.uno.edu/delta/www/thiele.htm

®Desirable Attributes for Interactive Identification Programs

http://www.biodiversity.uno.edu/delta/www/idcriteria.htm

LucID - CSIRO Interactive Identification package. Free demo downloads

http://www.lucidcentral.com/lucid/about.htm

I.T.I.S. (TRED, Taxonomic Workbench)

http://www.itis.usda.gov/

I.U.B.S./ International Union of Biological Sciences Taxonomic Database Working Group (TDWG). Database standards.

http://www.tdwg.org/index.html

Software for Biological Collection Management- W. Behrendson, TDWG Subgroup on Accession Data

http://www.bgbm.fu-berlin.de/TDWG/acc/Software.htm

ETI - Expert Center for Taxonomic Identification - Linnaeus II interactive identification software, World Taxonomist Database, World Biodiversity Database

http://www.eti.uva.nl/

Fishbase - Massive, multiyear project to catalog all fishes of the world and post identification material on the internet- 25,000 species, includes LarvalBase, and is multilingual

http://www.fishbase.org/home.htm

Digital Taxonomy THE site for links maintained by Mauro Cavalcanti the force behind FreeDELTA

http://www.geocities.com/RainForest/Vines/8695/

Prometheus II - Plants and the Royal Botanic Garden Edinburgh, but interesting reading about the construction of classification hierarchy.

http://www.dcs.napier.ac.uk/~prometheus/

Listservers - Archives of Delta-L site for taxonomic database information

http://listserv.surfnet.nl/archives/delta-l.html

US Organization for Biodiversity Information Listserver Archives including PEET, Taxacom, and TDWG

http://usobi.org/archives/index.html

Southern California Association of
Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

September, 2001

SCAMIT Newsletter

Vol. 20, No. 5

SUBJECT: No Meeting in December

GUEST SPEAKER:

DATE:

TIME: 9:30 a.m. to 3:30 p. m.

LOCATION:

Euclymeninae sp A
Lateral view, anterior end
B-10 rep.2 7July1997
Image R.Rowe 9/23/97

Next Meeting: There will be no SCAMIT meeting in December. The meeting initially to take place in December, Part II of our discussion of Taxonomic Databases, has been postponed until early next year.

NEW LITERATURE

Recovery from environmental disaster can be lengthy. Local areas heavily impacted by anthropogenic discharge in the 1950's and 1960's are still not back to pre-discharge conditions (although we are getting close in some areas). Kollmann & Stachowitsch (2001) use phototransect techniques to record the re-population of an area of the northern Adriatic largely defaunated by anoxia events in 1983. They report on monitoring which took place between 1985 and 1994. The community organization which was in place prior to the anoxic event has not re-emerged in the intervening years, so recovery has not yet been achieved. There have been signs of improvement, but nothing interpretable as a

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SCAMIT Newsletter is not deemed to be valid publication for formal taxonomic purposes.

restoration of pre-event conditions. Similar macroepifaunal data might be gathered offshore here in southern California using ROV video/still camera images.

Consideration of monitoring program design always raises interesting questions. Paiva (2001) revisits territory covered by earlier authors with an experiment in shallow (10m) coastal Brazilian waters. He carefully used a nested design and repeated sampling at frequent (2 month) intervals to examine both spatial and temporal variability. His experiment was designed to mimic the scales of variation which might be found in a sampling program using remote sampling, although his samples were collected by divers. The result is not unexpected; significant spatial variability at all examined scales. One problem here is the extrapolation to monitoring design as a whole, and with the basic issue of sample size not being dealt with by the author. Given the constraints of many samples (180 were incorporated into the overall design) a small sample size was chosen (0.008m2) this is not much larger than a Phleger corer. Samples of this size of marine macrobenthos are minimal at best, with each sample collecting only a relatively small fraction of the community at any given location. Personal experience in slightly deeper water with a slightly larger sampler (0.01m2) was that such small cores needed considerable replication to provide statistical power. Power analysis of the sampling referred to indicated that 17 cores would be required at each site to allow for detection of a 30% change in the mean between stations with 95% confidence. Since the shallower Brazilian stations are on fine sand bottom and do not support a particularly abundant fauna I suspect that even more of the smaller 0.008m2 cores would be required for adequate program sensitivity. This remains an interesting discussion, even if a power analysis would be likely to demonstrate that the significant variability witnessed was as much a result of inadequate sampling intensity as inherent spatial variability.

More and more investigations of wide-ranging species are adopting molecular techniques to augment morphology based taxonomy. Organisms such as scyphomedusae, which often offer few morphological details for consideration, represent particularly fertile ground for molecular examination. Dawson & Jacobs (2001) examined specimens of the jellyfish *Aurelia* from various parts of the world to test the idea that the two currently recognized taxa might hide additional diversity. They found that three named species were supportable on the DNA sequence evidence, and that among animals identified as *Aurelia aurita*, lay an additional 6 unrecognized sibling species in addition to the named form. On the west coast of North America the authors report two species; *Aurelia labiata* and *Aurelia* sp. 1. The authors indicate these species have morphological characters which differentiate them without recourse to collection of molecular data, but do not detail these characters in this paper.

The accumulating molecular data for cnidarians has allowed a new phylogenetic analysis of the Anthozoa (Won, Rho, & Song 2001). The authors performed a combined analysis using both molecular and morphological data. Both the morphological and combined analyses tell the same story, and both do not differ from previous morphologically based phylogenies. Within the anthozoans the major divisions shown in the analysis corresponded to Alcyonaria, Zoanthinaria, and Ceriantipatharia. Three hydrozoans were used as outgroups.

Arthropod relationships are a bit more involved than those of the anthozoans. Giribet et al (2001) revisit this territory, ground well trampled by previous visitants. Using a total evidence approach they combined information gleaned from a series of molecular sources with morphological data, to yield a large body of evidence. The data considered was comprehensive, and a novel computational approach using 256 parallel processors was

used to allow analysis of such a large amount of source data. The results strongly support Pancrustacea (Crustacea + Hexapoda), Myriapoda, and Chelicerata as monophyletic clades, with Pycnogonida as sister group. Onychophorans and tardigrades served as outgroups. More analyses using even larger samplings of the accumulating molecular data will probably follow.

Most discussions of introduced or non-indigenous species deal with all potential taxa. Rodrigues & Suarez (2001) focus their attention specifically on decapod crustaceans. They consider the mechanisms of transport, and treat a number of introductions which predate the current upsurge in transfer of organisms by man. Decapods in particular, were more likely to move between ecosystems as adults in the day of the wooden boat. More modern steel hulled vessels, while making the voyages more rapidly, also provide much less opportunity for adult hitch-hiking on the vessel exterior. The authors do bring up several interesting reports of transfer on towed oil rigs. One such event happened here in California, where the Japanese crab *Plagiusia dentata* was introduced on a towed rig which spent over two months in transit from the western to the eastern Pacific. When introductions are discussed parochial approaches are contraindicated. The fact that the main focus of this paper is on introductions to Argentina is irrelevant. Most, if not all of the organisms discussed may show up on our doorstep at one time or another.

SAMPLE SORTING TECHNIQUE

While we try not to think of it more than we have to, the subject of sample sorting is critical to examinations of the benthos. We generally do a good job of it based on the results of the QC examinations of sample sorting undertaken as part of both the SCPBB program in 1994, and the recent B'98 Benthic program. It is time consuming, however, and attempts are constantly being made to reduce the effort required to bring sediments, debris, and organisms to a parting of the ways.

In other areas, including both the Pacific Northwest and the Western Atlantic, use is frequently made of vital staining with rose bengal. This is often touted as being a major labor saving method, and it may well be for the sorter or contract administrator. It is often, however, a nightmare for the taxonomist who finds many taxonomic clues changed or eliminated by the practice. Most, if not all monitoring groups in the Southern California Bight have avoided using vital staining for their routine monitoring. There are other options which can both improve the quality of the specimens procured by remote samplers, and simplify the removal of organisms from benthic sediments.

Member Tom Parker forwarded the following hints from a posting on the Annelida Listserver. They originate with Roman Porras and obviously follow a pre-existing discussion thread. His comments are worth repeating, and we do so here:

"RE: Macrofauna separation technologies
As Mary Petersen, I usually use elutriation for separating macro and meiofauna from sediment. I put the sample or a fraction of it into a decantation funnel connected by its narrow opening to a tap. The water pass across the sample dragging the fauna, exits by the top of the funnel and it is conducted to a sieve in which the animals and debris are retained. If the sample is previously stained it is easy to see how the fauna leaves the sediment, after a few minutes, all animals and debris have been extracted while the sediment remains in the funnel. With the tap, you may regulate the flow at each moment in order to optimise the extraction."

The problem arises when molluscs are present in the sample since they are difficult to separate from sediment and it is necessary to extract them by hand. However, Robinson and Chandler (1993) describe a technique to separate molluscs:

"A method is presented which enables infaunal juvenile bivalves to be separated from associated sediment with a combination of elutriation and flotation techniques. Simple elutriation is used to remove less dense organic detritus and a relatively new, nontoxic compound (sodium polytungstate) is used to create a heavy liquid that sorts the bivalves from sediment by relative density. The technique was applicable to 12 species of molluscs of various sizes and was 98-100% effective in separating juvenile Mya arenaria, ranging from 0.5 to 24 mm in shell length, from surrounding sediment."

Gravimetric separation for mollusks is a technique with a long history. While working for Dr. Jim McLean at NHMLAC in the 60's your editor often used it. In that application, however, mollusks were the only target. Samples were air-dried (too bad for all you worms and crustaceans!) then floated on carbon tetrachloride. While this offered the appropriate density for separating dried shelled mollusks, it was also highly toxic. The suggestion of using sodium polytungstate seems a great advance over the earlier technique. An even older technique was used by the 49ers' of the California gold rush which relies not on heavy fluids but on plain water. It still is a good technique in the hands of an experienced worker. Using a dish or bowl of the appropriate cross-section and swirling it with the proper motion, mollusks can be mobilized and swished onto a screen, leaving nearly all the coarse sediment behind. The resulting blend of a little sand/gravel and shell debris + living shelled mollusks can then be sorted in very little time. If the procedure is repeated until no more mollusks are removed in a wash (5 or 6 swishes generally suffice) a brief scan of the remaining sediments should verify that they are clear of animals. Using this technique on coarser mixed sediments from shallow high-energy environments can reduce processing time for a sample by over 80%, while providing good, repeatable removal of organisms. The technique can be used in conjunction with a previous elutriation, or the debris and floatable organisms (low density items like crustaceans and annelids) can be left in to be swish washed out with the mollusks.

24 September Meeting Minutes

The meeting was called to order by President Ron Velarde at 9:45. Vice-president Leslie Harris informed us about upcoming meetings. The October meeting is scheduled for two days, October 9th and 10th, at the Los Angeles County Museum of Natural History (LACMNH). On the first day, Don Cadien and Dean Pasko will make a presentation on Phoxocephalids. On the second day, John Chapman will make a presentation on Corophiids. Attendees are welcome to bring their unidentified amphipods. The November meeting will occur on the 5th , will also be held in Los Angeles and Angel Valdés will be the guest speaker with the topic being nudibranchs. There is no scheduled meeting for December. In January the meeting will be held at Dancing Coyote Ranch and the topic will be Edwarsiids. For the February meeting, we will exchange specimens of *Pista* for the round robin exercise that was discussed during last June's meeting. The results of the specimen exchange will be discussed at the March meeting. Discussions of several smaller groups will be presented at the February meeting. Megan Lilly will discuss a new holothuroid, a new ascidian and possibly somethng about Octopus... Kelvin Barwick will follow up on entoprocts, and Don Cadien will revisit the cumacean genus *Cyclaspis*.

A couple of ideas for future meetings were also mentioned. A meeting to further discuss taxonomic databases is pending. Phil Hoover, a new curatorial assistant at LACMNH, might be discussing an Amphipod paper at a future meeting.

The Western Society of Naturalists annual meeting will be held November 9-12 in Ventura, California. For more information, go to their website at:

www.wsn-online.org.

The guest speaker for the day was Larry Lovell, and the topic was Euclymeninae reported from the Bight '98 program. Larry provided handouts to those attending. A copy of those handouts edited to reflect the results of the meeting are at the end of the newsletter.

Larry discussed the results of his work on the Bight '98 Euclymeninae. Among the families (considering all taxa) recorded for the Bight '98 program, the Maldanidae ranked 8th in abundance. There were 4608 individuals. Euclymeninae accounted for 81.1% of the Maldanids (3770 individuals). Euclymeninae sp A was the most abundant euclymenid with 1201 individuals, and *Petaloclymene pacifica* was second with 996 individuals.

We then reviewed Larry's key to the subfamilies of Maldanidae from Southern California which follows the subfamily classification as presented in Fauchald (1977). We next looked at the key to the Euclymeninae of Southern California and reviewed it, couplet by couplet. Methyl green staining pattern is used as one of the main diagnostic characters in this key. Larry explained that in couplet 9, the phrase "better developed stain" means a more intense stain that is denser and broader (covering more surface area of the animal). The question was asked, "What tissue type uptakes methyl green stain?" Larry answered that the stain is picked up by mucoid/glandular areas. He referred us to Arwidsson 1907 for more details.

Larry also brought an assortment of older illustrations (mostly of methyl green staining patterns), voucher sheets, and reference material for people to browse through and copy if they did not already have one. Included among these were identification sheets for Maldanidae sp 1, Maldanidae sp 2, and *Petaloclymene pacifica*. These sheets included illustrations of methyl green staining patterns for each species. Larry noted that Maldanidae sp 1 may turn out to be a described species, because all the specimens collected have been relatively small.

There was a question about distinguishing the species in couplet 11. In "*Clymenura*" *gracilis*, the glandular area on setiger 8 forms a complete band, and lateral notches are absent on the prostomium. In *C. columbiana*, however, the glandular area on setiger 8 is a ventral, spade-shaped region, and lateral notches are present on the prostomium.

Larry commented that he made identifications of all specimens based on the anterior portions. The posterior ends of Euclymenids were sorted into the fragment vials which Larry did not receive. Identifications can be problematic unless a minimum of eight or nine setigers were present. Larry said he can identify *Clymenella* species with a minimum of four segments.

After a 10 minute break, we began to look at specimens. There was a question regarding a size limitation for methyl green stain. According to Larry, there is a less developed and less intense stain in juveniles. Within a size series, one can see the progression of stain patterns. Under the microscope first was a stained specimen of *Axiothella*. The specimen we looked at was collected from station 2491 at a depth of 95 m. On setiger 8, the presetal area did not stain, and the postsetal area stained dark. On setigers 4 through 8, the pre-setal area stained light green, and the post-setal area stained dark green. This specimen was similar to *A. rubrocincta*, but Leslie pointed out that *A.*

rubrocincta has a dark presetal stain on setigers 4 through 8. We concluded that this is an undescribed species of *Axiothella*. Leslie said that she has notes on several undescribed species of *Axiothella* and that this is one of them. Therefore, all references to *A. rubrocincta* in Larry's handouts should be changed to *Axiothella* sp. We examined a smaller specimen which had the same staining pattern. It was collected at station 2522 (Santa Cruz Island) at a depth of 80 m. Larry next looked at a small specimen of *Axiothella rubrocincta* collected from an International Treatment Plant station sampled by the City of San Diego. From a ventral view, there was dark solid stain on the anterior areas of setigers 5 through 8. The posterior areas of setigers 5 through 8 stained a darker but diffuse green. Most of the participants agreed they would mis-identify this specimen as *A. rubrocincta*. It was pointed out that the staining pattern illustrated in one of Leslie's handouts had been copied very darkly for effect and unfortunately, did not represent the true staining pattern. Leslie added a cautionary note not to identify specimens based solely on staining pattern. Taxonomists should look at other characters, because she has noted that more than one species can have the same staining pattern. Checking for other characters can be particularly important when identifying juveniles of *Axiothella* because the rostrate setae in setigers 1 through 3 may not be fully formed.

Next up was a specimen of *Clymenella complanata*. We located the lateral notch on the 4th setiger which is a unique character for this species. It was suggested that you can slip the tip of your forcep under this notch to help in locating it. *C. complanata* had a deep transverse groove and nuchal organs on the cephalic plaque. This specimen was collected at station 2209, off Orange County, at a depth of 65 m.

The next specimen we examined was *Clymenella* sp A of Harris 1985. There was a handout for this species prepared by Leslie. Larry stated that *Clymenella* sp A was recorded in samples from Marine Ecological Consultants (MEC) only and was not recorded from other laboratories participating in Bight '98. We had a close-up view of the cephalic plaque. There were primary and secondary transverse grooves, and the nuchal organs were perpendicular to these grooves.

We next examined a specimen of "*Clymenura*" *gracilis*. Larry put the genus in quotes, because it is suspected that this may not be the correct genus in that it does not follow the pattern of a ventral glandular area as do other species of *Clymenura*. In "*Clymenura*" *gracilis*, the glandular girdle extends all the way around the 8th setiger.

The next worm we examined was *Clymenura columbiana*. All the specimens that Larry recorded were quite small, about .5 mm wide. On the ventrum of setiger 8, there was a spade-shaped, glandular area. This area stained green but the dark stain did not extend all the way around the setiger. On the dorsum of setiger 8, there was a thin band of light speckling. This worm was collected from station 2491, San Miguel Island, at a depth of 95 m. This station had course sediment.

After lunch, we got back to work and looked at *Euclymene campanula*. Larry believes that specimens of *E. campanula* orient themselves anterior end down in the sediment resulting in the collection of mostly posterior ends. Larry pointed out that this is an example of a situation where it would be useful to count a posterior fragment as an individual. The posterior end of *E. campanula* was distinguished by 7 asetigerous segments, each with a pronounced ridge (or flanges) on the posterior part of the segment. The pygidium had a ring of short anal cirri. In this species, the number of anal cirri varies with size of the animal, but they are uniformly short in length.

Larry stained the specimen; the first 4 setigers stained green. The anterior portions of setigers 5 through 8 stained green, giving a banded appearance. The ridges (or flanges) in the posterior end also stained green.

A specimen of *Isocirrus longiceps* was up next. The posterior rim of the cephalic plaque came together to form a "V". The cephalic plaque had multiple transverse grooves. There was a collar on the anterior end of setiger 4, .

We then viewed a specimen of *Petaloclymene pacifica*. The methyl green stain on setiger 8 extended both pre-tori and post-tori. There was a darker, green oval patch on the ventrum of setiger 8 on both sides of the tori. We located the dorsal pores on setigers 7-9 which is a character that distinguishes *P. pacifica* from other local fauna.

Next, Larry brought out a specimen of *Euclymene ? grossa newporti*. We referred to Leslie's older handout from 1985 with illustrations of the stain patterns. There was a dark green stain on presetal and postsetal areas on setiger 8. The staining pattern of this specimen did not exactly match the staining pattern of the illustration. There was a question about the identification, and Leslie suggested the type specimen should be examined and compared to this specimen.

The next worm under the microscope was a specimen of *Praxillella pacifica*. The methyl green stain extends to the tori on setiger 8, but it does not extend beyond that. On segment 2, there was a lightly-stained, oval-shaped area. We referred to this as the "collar area".

Then we examined a specimen of *Praxillella gracilis*. There was a long, thin anterior palpode on the prostomium. The methyl green stain did not extend past the tori on setiger 8.

A distinguishing feature on the next specimen, *Maldanella robusta*, was the absence of neurosetae on setiger one. The two nuchal organs on the cephalic plaque were V-shaped and anteriorly placed. The cephalic rim was fairly smooth. The pygidium of this worm had a scalloped edge. There was some discussion as to whether this specimen was *M. harai*, but we concurred the identification should remain as *M. robusta*.

Larry then showed us a large specimen of Maldanidae sp 2 of Lovell and Phillips 1995 provided by Tony Phillips for the meeting. Larry commented that all specimens he had previously seen had been much smaller. The m.g. staining pattern was like that of *Euclymene campanula*. Leslie confirmed the identification.

The last species up for discussion that day was Maldanidae sp 1 of Lovell and Phillips 1995. Only small specimens of this species have been found. The cephalic rim was low and not well developed. There were single rostrate uncini on the first 3 setigers. Methyl green stain revealed a slight anterior band on the first setiger and well defined anterior bands on setigers 2 through 7. There was no stain after setiger 7 except around the uncini on setigers 8 and 9. The pygidium had one long cirrus and about 20 short cirri. Leslie looked at the specimens and said she believed these are juvenile Euclymeninae sp A SCAMIT 1987 commenting that the juveniles lack the double staining stripes that are seen in adults. She felt confident of the m.g. staining growth pattern she has seen from juvenile to adult.

JOBS

The San Francisco Estuary Institute is seeking a Program Manager for the Regional Monitoring Program. For more information, please see the attachment at the end of the newsletter (paper version) or visit their website at:

www.sfei.org

SIDE NOTE

The email addresses for both Ron Velarde and Megan Lilly have changed. Please notice the new addresses in the informatin box. - M. Lilly

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Volumes 1 - 4 (compilation)	$ 30.00
Volumes 5 - 7 (compilation)	$ 15.00
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Single back issues are also available at cost.

Euclymeninae Reported from the Bight '98 Program

Lawrence L. Lovell

The author identified all specimens of Euclymeninae from the Bight '98 project. This workshop presents the taxonomic characters and techniques used to identify those specimens. Dependable morphological characters and methyl green staining patterns were used to identify material to species level.

Malmgren erected the family Maldanidae in 1867. Arwidsson (1907) subsequently divided the family into five subfamilies; Euclymeninae, Lumbriclymeninae, Maldaninae, Nicomachinae, and Rhodininae. Three additional subfamilies have recently been proposed. Clymenurinae by Imajima and Shiraki (1982a), Notoproctinae by Detinova (1985), and Boguinae by Wolf (1983) in moving the family Boguidae (Hartman and Fauchald 1971) into the Maldanidae. Important taxonomic publications on the family are by Arwidsson (1907), Day (1967), Fauchald (1977), Imajima and Shiraki (1982a, 1982b), and Rouse (2000). For the purposes of this project the subfamilies presented in Fauchald (1977) are followed retaining the later proposed Clymenurinae within the subfamily Euclymeninae.

The Euclymeninae are characterized by having both anterior and posterior ends with plaques and the anus terminally oriented. A cephalic rim, keel, and nuchal slits are present on the prostomium. The margin of the posterior plaque may be smooth, crenulate, or bordered by anal cirri and the anal cone may be projecting beyond the rim or low and not projecting beyond the rim. Some taxa have segmental collars or well-defined glandular areas in the thorax. Notosetae are capillary. Anterior neurosetae can be either acicular spines or rostrate uncini. It is thought that some species may drop their rostrate uncini and add acicular spines as they get older. These traditional characters have not been wholly adequate to identify specimens encountered in regional monitoring programs.

The Euclymeninae are well-represented in southern California coastal shelf sediments. However, the tendency for them to fragment when collected has been a problem for taxonomists attaining species level identifications. Some particularly large specimens of certain taxa may have only their rear ends collected due to their large size and vertical head-down orientation in the sediments. When this occurs, programs that do not count these posterior fragments will miss the opportunity to add information on rarely or incompletely sampled taxa to their database.

Attaining complete specimens for taxonomic analysis begins in the field. Gentle screening of sediment samples or use of a float table in the field will help keep fragmentation to a minimum. The amount of fragmentation is directly related to water pressure and rough handling. Use of a relaxant prior to fixation is recommended to further prevent fragmentation when the animals are exposed to Formalin. Subsequent handling by sorters and technicians performing biomass measurements are another possible cause of fragmentation. If the object is to have specimens that can be identified, then care must be taken prior to the taxonomy to provide material in good condition. As the old saying goes "Garbage in, garbage out!" or in this case "fragments in, no species IDs out"! Your database will be much cleaner and analyses more meaningful when a higher percentage of animals can be identified to species.

Methyl green staining procedures follow those generally discussed by SCAMIT members at numerous meetings. A working solution dark enough to stain in a reasonable amount of time (10-15 minutes), but weak enough to see animals through the solution to pull them out, was used. As the solution becomes weaker

through use and uptake by animals, additional stock solution of darkly mixed stain is added to bring the working solution back to working strength. There are no methyl green solution formulas suggested and each taxonomist must decide what works best for them in their particular working conditions to achieve workable staining of adequate strength. In any case, there is usually some destaining that will need to take place before some staining patterns will be discernable. Just as morphological character states develop and change with size and maturity, so do methyl green staining patterns. Juvenile patterns will look different or incomplete until placed in context with the overall development of the adult pattern.

Bight '98 Euclymeninae

By Lawrence L. Lovell

Axiothella rubrocincta (Johnson 1901)

Axiothella sp.

Clymenella complanata Hartman 1969

Clymenella sp. A of Harris 1985

Clymenura columbiana (E. Berkeley 1929)

"*Clymenura" gracilis* Hartman 1969

Euclymene campanula Hartman 1969

Euclymene ? *grossa newporti* Berkeley and Berkeley 1941

Euclymeninae sp. A SCAMIT 1987

Isocirrus longiceps (Moore 1923)

Maldanella robusta Moore 1906

Petaloclymene pacifica Green 1997

Praxillella gracilis (M. Sars 1861)

Praxillella pacifica E. Berkeley 1929

Axiothella sp., *Clymenura columbiana*, *Euclymene* ? *grossa newporti*, and *Maldanella robusta* have not been previously reported by POTW monitoring agencies and are not in Edition 3 of the Taxonomic Listing of Soft-Bottom Macro- and Megainvertebrates from Infaunal and Epibenthic Monitoring Programs in the Southern California Bight. Of the Euclymeninae taxa listed in Edition 3, only *Euclymene delineata* was not reported for the Bight '98 project. Further discussion with the original POTW's reporting *E. delineata* (LACSD and Hyperion) indicate that these were misidentified specimens from the 70's and the labs no longer include that name in their species lists.

Key to the Subfamilies* of Maldanidae from Southern California

By Lawrence L. Lovell

1. Both cephalic and anal plaques absent **2**
1. At least an anal plaque present **3**

2. Rostrate uncini in double rows, posterior segments with encircling collars ..... **Rhodininae**
2. Rostrate uncini in single rows, posterior segments not collared ..... **Lumbriclymeninae**

3. Cephalic plaque absent, anal plaque present ..... **Nichomachinae**
3. Both cephalic and anal plaques present **4**

4. Anus dorsal ..... **Maldaninae**
4. Anus terminal ..... **Euclymeninae**

*This key follows the subfamily classification as presented in Fauchald (1977).

Key to the Euclymeninae of Southern California
By Lawrence L. Lovell

1. Neurosetae absent on setiger one ....***Maldanella robusta***

1. Neurosetae present on setiger one **2**

2. Setiger four with deep encircling collar **3**

2. Setiger four without collar **4**

3. Acicular spine count for setigers 1-3:1, 1, 1; 4-5 transverse folds on cephalic plaque; lateral edges meet in V-shape at rear of prostomium..... ***Isocirrus longiceps***

3. Acicular spine count for setigers 1-3: 1, 1 / 2, 1 / 2; single transverse fold on cephalic plaque; lateral edges rounded at rear of prostomium .... ***Clymenella complanata***

3. Acicular spine count for setigers 1-3: 2, 2 / 3, 3 / 4; two transverse folds on cephalic plaque; lateral edges rounded at rear of prostomium..... ***Clymenella* sp. A of Harris 1985**

4. Methyl green stain on setigers 4-7 is well developed on both pre and post setal areas **5**

4. Methyl green stain on setigers 4-7 is well developed on the pre setal area only **8**

5. Methyl green stain on setiger 8 on both pre and postsetal areas **6**

5. Methyl green stain on setiger 8 on presetal area only **7**

6. Neurosetae of setigers 1-3 with 4-8 neurosetae; dorsal pores absent, ventral pores on setigers 7-9..... ***Axiothella* sp.**

6. Neurosetae of setigers 1-3 with single neurosetae; dorsal pores absent, ventral pores on setigers 6-9 .....***Euclymene ? grossa newporti***

6. Neurosetae of setigers 1-3 with 2-4 neurosetae, dorsal pores on setigers 7-9, ventral pores on setigers 7-9 .....***Petaloclymene pacifica***

7. Prostomium with long thin anterior palpode ..... ***Praxillella gracilis***

7. Prostomium with short rounded anterior palpode ..... ***P. pacifica***

8. Methyl green stain after setiger 8 with racing stripes ..... **Euclymeninae sp. A SCAMIT 1987**

8. Methyl green stain after setiger 8 without racing stripes **9**

9. Methyl green staining area better developed in early thoracic setigers, with lateral unstained line in segments 1-4, thickened presetal flanges develop in posterior segments ..... ***Euclymene campanula***

9. Methyl green staining area better developed in later thoracic setigers, lateral unstained line absent, presetal flanges absent in posterior segments **10**

10. Glandular band on setiger 8 a complete band of similar size to previous segments, slight lateral notches present on prostomium ..... ***Axiothella rubrocincta***

10. Glandular area on setiger 8 a complete band, better developed ventrally than on previous segments; lateral notches absent on prostomium ..... ***Clymenura gracilis***

10. Glandular area on setiger 8 ventral, spade-shaped; lateral notches present on prostomium ..... ***Clymenura columbiana***

Bight '98 Taxa Ranking by Family Levels

1.	Spionidae	29287	Polychaeta
2.	Sabellidae	9792	Polychaeta
3.	Capitellidae	9281	Polychaeta
4.	Amphiuridae	7841	Ophiuroidea
5.	Lumbrineridae	6572	Polychaeta
6.	Terebellidae	5783	Polychaeta
7.	Mytilidae	5353	Bivalvia
8.	Maldanidae	4608	Polychaeta
	(Euclymeninae	**3770**	**81.8 % of Maldanidae)**
9.	Cirratulidae	4593	Polychaeta
10.	Ampharetidae	4039	Polychaeta

Southern California Association of
Marine Invertebrate Taxonomists

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October, 2001

SCAMIT Newsletter

Vol. 20, No. 6

SUBJECT:	Edwardsiid Anemones Revisited
GUEST SPEAKER:	John Ljubenkov and Meg Daly
DATE:	11 January 2002 - **Friday**
TIME:	9:30 a.m. to 3:30 p. m.
LOCATION:	Dancing Coyote Ranch

Foxiphalus obtusidens (Amphipoda: Phoxocephalidae) and *Majoxiphalus major* (below) from October SCAMIT meeting 2001. - D. Pasko

Delay in newsletter production has led to release of this issue after the November meeting. There is no meeting and no Christmas Party in December this year. Have a happy and safe holiday season and join us again in 2002!

In regards to the January meeting, contact Secretary Megan Lilly for directions to Dancing Coyote Ranch. John has suggested that we might want to make the long treck earlier and spend the night.

NEW LITERATURE

The sophistication of recently developed genetic methodologies is used for examination and reconstruction of past dispersive events by O'Foighil et al (2001). They examined a series of western and eastern Atlantic samples of the brooding clam *Lasaea* spp. in an attempt to map the genetic similarities and differences in Iberian and macronesian populations, and try to relate western Atlantic populations to those of

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SCAMIT Newsletter is not deemed to be valid publication for formal taxonomic purposes.

the eastern Atlantic. The results were rather interesting in that they seemed to indicate that current circulation visible today may not correspond to that in place when these animals were expanding their range in the past. The genetic "trail" left behind in terms of similarity between genomes of the tested animals (210 individuals in this study, and another 60 in an earlier study using the same methodology) pointed to a total separation between the western, and down-current eastern, Atlantic populations. Although the existing data cannot confirm an ultimate pathway, data were consistent with an interpretation of dispersal based on rafting in subsurface waters propelled by retroflection from the predominant surface movement. Such detective work is fascinating and well worth pursuing. We look forward to further efforts at historical reconstruction, particularly with other groups lacking teleplanic larval forms, such as peracarid crustaceans.

Living animals offer many clues to their identity which is lost with preservation. Color and color pattern fall in this category in many cases, with few pigments conserved in preserved animals. Often groups of co-occurring specimens which have been separated on the basis of color or color pattern in the field, will prove to have subtle morphological differences as well, easily missed if the group separation had not been performed on the living material. Anker (2001) examines the situation of closely similar sibling species in snapping shrimp. Two new species are described from Sri Lanka in the paper, but more importantly for its broader application, the author provides a compilation of potential cryptospecies complexes worldwide. This should provide useful information in most areas of the globe, and it does here in California.

Another examination of a distant area with implications for local practice is found in evaluation of amphipod trophic diversity in the Weddell Sea (Dauby et al 2001). Many of the animals considered were much larger than our local species, and offered the authors a chance to perform both gut analyses, and make behavioral observations on captive animals. Food-choice experiments were also performed on aquarium maintained specimens. They derive a rather comprehensive treatment of the potential trophic spectrum for amphipods, which should be considered by those interpreting the local biology of these animals.

Examinations of our biota for invasive, non-indigenous species (NIS) have become both more numerous and more structured in recent years. As we come to realize that U.S. waters are suffering constant invasion because of the strength of international commerce, we are better able to consider both the mechanisms, and the consequences of invasion. Carlton (2001) provides a broad overview of the problem, while Chapman (2000) provides a more focused view of a particular aspect. Invasions do not happen outside an ecological context, and it is this that Chapman seeks to provide in his symposium review of the zoogeography of estuarine peracarid invasions. Those of us at the October workshop got to hear John deliver, essentially, this treatment as a talk. Persons unable to attend that meeting will have to content themselves with reading the article. Carlton's review is available by request from the Pew Memorial Trust and can also be downloaded as a PDF file from their website. The covers of the hard copy of this article bear a truely frightening image of the Chinese wooly-handed crab *Eriochir sinensis* taken in Germany.

It has been suggested in the past that healthy ecosystems are largely resistant to invasion. Two papers by Jackson (2001) and Jackson et al (2001) consider the history of the coastal ocean in the US and comment on why we are where we are today [among other things, inundated with introduced species]. While a number of potentially onfounding influences are manifest, the authors find a clear pattern of decline which begins with over-exploitation of

marine stocks by humans. In some cases these impacts can be traced back to indigenous peoples, and are not totally a result of the emigration of european peoples to North American. This initial unbalancing of the coastal ecology they see as leading to a cascade of effects and impacts leading to a microbialization of coastal waters. That is, that a previously complex food web is collapsed by removal of key species (usually the largest) by human exploitation. This appears to be a well supported thesis, and not a very comforting one.

AMPHIPOD WORKSHOP MINUTES

Participants in the two day amphipod workshop included Dr. John Chapman, Jim Roney, Tony Phillips, Phil Hoover, Don Cadien, Lisa Haney, Carol Paquette, Dr. Doug Diener, Ron Velarde, Eric Nessler, and Dean Pasko. Visits from Dr. Jody Martin, Leslie Harris, and Todd Haney added briefly to the group. After a brief business meeting we got down to the work at hand.

On Tuesday the 9th we started out with distribution of a new phoxocephalid key prepared by Dean Pasko. It was designed to bring together all of the taxa, regardless of collection depth, taken in the waters of the Southern California Bight. Dean produced this at the request of Don Cadien, with an eye to the possibility that the upcoming regional sampling in 2003 will include sampling offshore in the Southern California Borderland. The workshop served as a good opportunity to vet the key and get immediate feedback from interested users. It also helped us focus on the problems at hand by selecting "key" characters currently used for separation of species in the family. The key drew from a number of precursors prepared by Barnard, Jarrett & Bousfield, Cadien, CSDMWWD's own in-house key, and others. None of these was as comprehensive as Dean's resulting construction. He is modifying the draft used at the workshop to incorporate what we learned. The final product should be available in the near future and will be included with a newsletter.

One of the first items we reviewed was how to interpret the presence/absence of subapical spines on uropods 1 & 2. This is important as it occurs in couplet 2 of the key, and you will go terribly wrong if you interpret the structure incorrectly. Subapical spines are not apical, that is they are not the same as the apical nail. Instead they lie just below the apical nail, and are lateral on the ramus. They are typically small and posteriorly directed (laying nearly prostrate on the ramus), but are well separated from any more basal spination.

We began our consideration of problem taxa with the phoxocephalid genus *Foxiphalus*, focusing particularly on the methods used to separate *F. cognatus* from *F. obtusidens*. This complicated intercalibration reidentification of SCBPP samples six years ago. The keys at that time tended to emphasize the structure of the epistome and the ensiform process of the second antenna. As initially pointed out by Jim Roney, the epistome illustrated for *F. obtusidens* is quite variable. Some of this variation came from the fact that the concept of the species "obtusidens" has contracted significantly from its treatment in Barnard's 1960 monograph on the family. He illustrated a number of forms under the name *F. obtusidens* later described as other species in J. L. Barnard & C. M. Barnard (1982). Even once these extraneous images were set aside, there remained a significant core of variability in the characters used to discriminate *F. obtusidens* from its congeners. In preparation for the meeting Don Cadien and Lisa Haney had examined LACSD vouchers of *F. cognatus* (two lots only) which had been separated from *F. obtusidens* on the basis of the epistome and the ensiform process size. In review of the literature it was concluded that the only definitive difference of a non-equivocal nature was the presence of a bifid right lacinia mobilis

in *F. obtusidens*, and a simple right lacinia mobilis in *F. cognatus*. We removed and mounted the right mandibles of specimens from each of the two lots identified as *F. cognatus*. They uniformly had a bifid lacinia mobilis of a characteristic appearance; with the distal branch only about one-third to one-half the length of the proximal, and gently curved away from the axis of the structure. We showed examples of this to the participants using the digital imaging system brought along by the attendees from the Pt. Loma Lab. The animals were thus misidentified *F. obtusidens*.

Jim Roney pointed out that the two differed in a more easily accessible way; in the spination of the second uropod. Jim said that he had found the presence of a single medial spine on the inner ramus of uropod 2 to be diagnostic of *F. cognatus*. There is no spine on the inner ramus of uropod 2 of *F. obtusidens*. Several specimens whose identity as *F. obtusidens* had been confirmed with the right mandible, the epistome, and the antennal ensiform process were examined for medial spines on the inner ramus of U2. They were absent as expected. We then pulled the holotype of *Foxiphalus cognatus* from the Museum collection, and began to check the characters which seemed to be potential discriminators: the right lacinia mobilis and the U2 spination.

The holotype is a fully dissected specimen whose parts remain loose in the preservative of the inner vial of the jar housing it. After rinsing it out into a dish for examination Don Cadien began to panic as he watched the disconnected parts whirl around in the alcohol, realizing that he had to find and replace all the individual mouthparts, etc., or permanently impair the condition of the holotype. At least the necessary parts were found and examined.

The right mandible was located and mounted. Upon examination it was found to have a simple lacinia mobilis, as advertized. Jarrett and Bousfield (1994) had indicated in their treatment that the right lacinia mobilis might actually be lacking. The reason for this statement was clear in the condition of the holotype. The right lacinia cannot easily be separated from the spines of the raker row except by position. There is nothing in the structure of the lacinia that differentiates it from the raker spines. One must act on the conviction that loss of the lacinia on one of the two mandibles is less likely than that the lacinia should converge structurally on the raker spines in order to report a right lacinia in this animal. Counts of the molar hump spines proved nearly impossible in the mounted specimens, so no serious attempts were made to check the reported differences between *F. cognatus* and *F. obtusidens* in molar spine count. Images of the right lacinia of both *F. cognatus* holotype, and selected *F. obtusidens* specimens were captured with the digitizer, and are available at the Point Loma Lab (contact Dean Pasko).

The urosome of the holotype was partially intact, with the uropods removed from one side. Attempts to resolve the condition of the U2 which remained attached were unavailing. The removed appendage was eventually found after much searching, and showed that the holotype did have a medial spine on the inner ramus of U2 as expected. This was also digitized and should be available from Dean Pasko.

Finally, examination of the epitome of *F. cognatus* showed it to be of the "acute" form as illustrated by Barnard (1960) (images available from Dean Pasko, CSDMWWD). And, in conclusion, while the epitome of *F. obtusidens* has proved to be highly variable in it's degree of production – with the more extremely produced state creating the confusion cited above – it is consistently blunt or apically rounded.

The result of these examinations is that we should downplay the use of the characters previously considered diagnostic - the epistome and the ensiform process - and concentrate on

the characters we verified during this meeting. It is recommended that the initial identification as *F. cognatus* be based on the configuration of U2 (according to Dean's key), and that the ID be confirmed via the right mandible. Based on examination of CLACSD collections and an initial foray into the 21 lots identified as *F. cognatus* in the NHMLAC collections, this is not a common species in the SCB. There is a set of J. L. Barnard identified *F. cognatus* specimens in the collection (5 lots) which will provide useful information on the constancy of other character states once examined. Distribution of *F. cognatus* must, however, be unsure until existing material is reexamined. Thirteen lots from the BLM project now at the museum need reevaluation. The first *F. cognatus* examined from that material proved to be an *Eobrolgus spinosus*, and a nice large one at that (remember, however, that these identifications predate the erection of *Foxiphalus* and *Eobrolgus* by Barnard in 1979 and the key introduced by Barnard & Barnard in 1982).

After considerable delay (about 20 inspections of the dish) it was determined that all of the holotype had been returned to its vial, and we pushed on to a consideration of another *F. obtusidens* related issue, separation of *Majoxiphalus major* from *F. obtusidens*. Originally described as a subspecies of *F. obtusidens* by J. L. Barnard in 1960, it gradually progressed to being recognized at species level as *F. major*, then finally was made the type species of a new genus by Jarrett and Bousfield (1994).

Don Cadien has felt comfortable with this separation, as he had access to considerable material collected in Central California, where the species is common. He feels that the two can easily be separated on a gestalt basis related primarily to the configuration of the head and rostrum. Others who have not seen many (or any) specimens, found the differences as discussed by Barnard (1960) and Jarrett and Bousfield (1994) more problematic. Carol Paquette was kind enough to bring in two lots taken in shallow water off Atascadero State Beach (Morro Bay) in NPDES sampling. Each contained a number of specimens of *M. major*, including some very large adults. One large female was pulled for comparison. An equivalent sized female was selected from among *Foxiphalus obtusidens* material brought by CSDMMWD. The two were placed side by side in a dish and direct comparison of various characters was facilitated. The conditions of both these animals were documented with the digitizing camera, and are available from Dean Pasko.

In addition to the relative lengths of the head and rostrum, we examined the condition of the 3rd pleonal epimeron, and the 5th and 7th pereopods of both animals. The quantitative differences in the width of the 4th and 5th articles of both these legs were much easier to appreciate when the two species were directly compared. Most participants seemed satisfied that the two were clearly differentiable, and based on the side-by-side comparison, they had a good fix on the appearance of the two species. Along the way we also examined specimens of *Foxiphalus golfensis* to demonstrate the dorsal setation along the posterior margins of the pleonites, and the strong ventral setation of the basis of P7. These features clearly separate this species from *F. obtusidens*.

Foxiphalus similis also came up with regard to the reported variability of the epistomal conformation in the male. Lisa Haney pointed out that the degree of sexual dimorphism exhibited by this species seemed greater than that reported for other species, and wondered if perhaps there was un- or under-appreciated sexual dimorphism in other members of the genus. We never really got to the examination of material from the NHMLAC collections which might address this issue, and we will need to address the question more thoroughly in the future. Fortunately most agencies have plenty of their own material of *F. similis* to

examine at home with an eye to sexually dimorphic variation. Lisa also wondered if males might be misidentified as other taxa because their epistomes differed so strongly from those of the females. Jim Roney opined that males of *F. similis* had reduced epistomes compared to females of the species, but not as reduced as in other congeners.

Character variability was a concern which ran through both days of this workshop (see *Corophium* discussion below). Several times we paused to grapple (usually without definite outcome) with such questions as "why does the presence of one spine on an appendage define a species level difference in some taxa, while broad variation in most characters is tolerated in others?" In other words, is the species concept applied evenly throughout the group? The answer was always "well, no..." to this particular question. There was no answer to the follow-up question "Well, why not?" The argument that eurytopic species might be expected to have a greater variability in character states than stenotopic species was put forward for consideration, but no consensus was reached. As mentioned, such interludes broke out sporadically over the two day workshop, but in the end no satisfactory treatment of the question of variability was reached.

After a break for lunch we returned to tackle a problem that arose from Dean's key. In the key he had chosen to return to the use of the species name *Parametaphoxus fultoni* for specimens in that genus taken in Southern California. Operating on the assumption that *P. fultoni* was a North Atlantic species, and not appropriate for use in our area, some local workers had been identifying local *Parametaphoxus* specimens as *P. quaylei*. In their original description of that species Jarrett & Bousfield (1994) were careful to note a series of minor differences between their species from Puget Sound (and other northern waters) from southern specimens identified as *Metaphoxus fultoni* by Barnard (1960). Piqued by Dean's key Don Cadien and Lisa Haney attempted to find evidence in LACSD specimens identified as *P. quaylei* that would either prove them to be such, or prove them to belong to another species. Character states examined were those provided by Jarrett & Bousfield, and also the condition of the copulatory spines on the 4th article of the 7th pereopod in the male. Barnard did not illustrate or describe them in the material he examined from the southern California Bight, and western Mexico. They were well illustrated for *P. quaylei* by Jarrett & Bousfield, and a good illustration of the copulatory spines of *P. fultoni* from European waters was provided by Lincoln (1979). It was hoped that this specialized secondary sexual character could be the key allowing us to decide if the southern California material belonged to a new species, or to one of the described ones.

Male copulatory spines were easily seen on the legs. A series of male legs from animals collected off Palos Verdes by CSDLAC showed an interesting situation. The male copulatory spines were definitely not the same as shown for *P. fultoni* by Lincoln (1979) so we ruled that out as a name to be used for our local specimens. Separating our specimens from *P. quaylei* will be more difficult as they are similar, if not the same, in copulatory spines. Our initial examination was of a first sexual molt juvenile male, whose antennae had barely begun to elongate. His copulatory spines were very different from those illustrated for *P. quaylei*, being more numerous, shorter, not flattened distally, and located higher up on the face of the segment.

Examination of more mature males from southern California showed nearly all these differences to be related to molt stage, not to interspecific differences. There does seem to be some variability in the appearance of the copulatory spines in mature males from our area, and they could overlap the condition illustrated for *P. quaylei* if we allow a little

variability in that species (not yet documented). No northern specimens identified as either *P. quaylei* or *P. fultoni* were available in the Museum collections.

Evaluation of the variability of the copulatory spines in *P. quaylei* remains work for the future. We should continue to evaluate the variability in spine count, size, and appearance in material from southern California as additional males are encountered and processed.

A number of the character states identified by Jarrett and Bousfield proved difficult to evaluate since they dealt with coxal configuration. In our small animals it was usually necessary to use the compound microscope to get enough magnification. Unfortunately most of these characters were located along the thickest section of the animal, and in a whole body mount, were hopelessly obscured by the many overlapping structures. Several of the characters that could be seen seemed to point to differences between our local specimens and *P. quaylei*. In particular we found the differences cited by Jarrett and Bousfield in the size and shape of coxa 1, in the basis of P7, and in the posterior lobe of coxa 4, to be visible in the specimens examined. We need to keep examining these animals locally to develop a good idea of the degree of population variability in these characters. It is suspected that there is a local species separable from *P. quaylei*, a position which John Chapman endorsed as being his experience as well. We should at the very least discontinue use of *Parametaphoxus fultoni* as being inappropriate for our local material. We should begin to use a new provisional species *Parametaphoxus* sp A (a voucher sheet will be forthcoming) to refer to those specimens in the genus taken in southern California and northern Mexican waters. The range of this species, and if there is a gap or an overlap at the northern end of its distribution, with respect to *P. quaylei,* remains to be demonstrated.

We then considered two related species, *Metaphoxus frequens*, and *Cephalophoxoides homilis*, and how they are separated from *Parametaphoxus*. Dean was not happy with the reliance solely on examination of the mandibular molar for separation of *Cephalophoxoides* from the other two species. The presence of a triturative molar proved a problem for CSDMWWD recently when a portion of the molar was left behind while pulling the mandible for closer examination. The resultant stub made a triturative molar appear non-triturative, resulting in a misidentification of a *Cephalophoxoides* as a *Metaphoxus*. While these two species can be readily distinguished by more easily observable characters (e.g., the setal pattern of coxae 1 and 2), we were unable to come up with another character which could be applied throughout the three genera. One species in each of the three genera is present in the Southern California Bight and are separated on the condition of the molar and second gnathopods.

Don Cadien maintains that *Cephalophoxoides homilis* can be separated from the other two on the basis of a thickened and/or reinforced carapace at the very end of the rostrum. This gives *C. homilis* the appearance of having an incipient "drip" at the end of its "nose". While this thickening is subtle, it is present in all specimens of the species examined to date. *Cephalophoxoides homilis* proved to be quite abundant in collections in the Bight, with 185 lots (114 of them identified by J. L. Barnard) in the Museum's collection.

Because the Times/Mirror Room in which we were meeting had been promised to another, we packed up in the late afternoon and moved to the Worm Lab to continue our specimen examination and discussion. We reverted to our earlier discussion of *Foxiphalus* with examination of the holotype of *F. xiximeus*, a species seen only rarely (there were no lots other than the holotype in the collection). We confirmed the inflexible nature of the apical nail of the inner ramus of U1, and also the

nature of the epistome in this species. As these are characters which feature in separation of *F. xiximeus* in the key, it was important to verify their utility. We also examined some specimens of *F. similis* in an attempt to appropriately describe the nature of the epistome in that species.

John Chapman had requested that specimens be pulled of *Rhepoxynius tridentatus* and *R. tridentatus pallidus*. He examined these to satisfy himself of the accuracy of the existing descriptions of these two forms. The first lot examined proved to be a label-squashed *R. heterocuspidatus* instead. This was segregated for correction prior to its return to the collections.

John also examined material of *Melita oregonensis* from the collection. We finally broke up the workshop and headed out for dinner and then rest for the rigors of another day of podwork.

On Day 2, Wednesday the 10th of October, we began by hearing a brief presentation by Phil Hoover on the new amphilochid revision (Hoover & Bousfield 2001). He informed us that, although being credited as first author, his role had been mainly in dissection and preparation. He expressed some unease about the new genera erected in the paper, a point where his views and those of his coauthor did not coincide. We will probably examine this family in more detail later, when we have gathered our material and spent more time applying the revised view of the Eastern Pacific forms presented in the paper, to the specimens we encounter in our monitoring.

John Chapman then gave a presentation dealing with non-indigenous species of peracaridans in the Eastern Pacific. This is substantially what he presented at the First National Conference on Marine Bioinvasions in 1999 (Chapman 2000). This was a most interesting and well presented hypothesis regarding the influence of climate on the NIS status of a region. John maintains that there are naturally exporting regions and naturally importing regions, where placement of a region in one or the other category depends on the variability and diversity of its climate. Nearly all non-indigenous species in estuaries of the northern hemisphere are from western sides of the Pacific and Atlantic oceans. It turns out that within 25 to 60 N latitude, the eastern Pacific and Atlantic coasts are relatively consistent in climate but diverse in habitat; while along the western sides of these oceans there exist only narrow bands of consistent climate. In other words, climate changes relatively rapidly and is quite varied with increasing latitude on the western sides of the Pacific and Atlantic oceans. Consequently, those species moving from west to east are more likely to find a hospitable local to settle, while movement in the other direction offers a much smaller likelihood of hitting that narrow band of hospitable conditions. Those unable to attend can get a good representation of this hypothesis from the paper cited above. We had asked for a review of the results of last summer's NIS survey in Southern California boat harbors, bays, and estuaries. John was unable to provide much of a summary because collections made during that effort were still being examined. We will hope for a presentation on the result of the survey at a later date when the lab work is completed.

We also asked John to give us his views on the revision of the Corophiidae presented by Bousfield & Hoover (1997). He did not do so in detail. He did state that while he was in agreement with the authors on many points, he felt that the genus *Sinocorophium* was not supportable. Having consumed all morning in discussions we retired to the Museum cafeteria for lunch.

The first specimens examined on our return belonged to an introduced species in Los Angeles/Long Beach Harbors similar or identical to *Corophium heteroceratum* from the South China Sea. Specimens of this taxon came from Hyperion (CLA-EMD), collected in

outer Los Angeles Harbor in monitoring of the Terminal Island Treatment Plant, and from the inner portion of Long Beach Harbor (from Carol Paquette, MBC Applied Environmental Sciences). Initially it was thought that the two forms might not be the same. Differences in proportions, spine counts, configuration of telson posterior margin, etc. all seemed to point towards separate species. This was the initial position. In the ensuing examinations this changed repeatedly; for a time it seemed as if both *C. heteroceratum* and *C. homoceratum* were present in the Harbors. After good specimens of both sexes from both areas were viewed, John concluded that this was all one variable species, and that species was *C. heteroceratum* Yu. The character which seemed to unify all the variant individuals was the nature of the distal tooth on the 4th segment of antenna 2. In *C. heteroceratum* this is truncate terminally, while in all related species it comes to a sharp point. The question of character variability was discussed further in relation to the examination of these specimens.

Don Cadien then came forward with specimens he had identified as *Monocorophium californianum*, an unusual offshore endemic species. These had been taken in a trawl from about 30m off Palos Verdes. John examined the specimens and agreed. We also checked the material in the museum collection for comparison. The lot from off Palos Verdes contained over 20 specimens, more than the 3 lots in the museum collection combined. We considered why this animal was so rare, and the most likely explanation was that its preferred habitat was ecotonal, and not often sampled. The Palos Verdes lot came from tubes on a dead gorgonian skeleton caught in a trawl net. Other captures in similar habitat have probably been tossed over the side without examination of the muddy tube mass. If *M. californiamum* favors habitats of low relief in an otherwise soft bottom, most of its population would not be subject to sampling by remote means. John Chapman also pondered if this species might have been driven into marginal habitat by competition in more typical shallow embayments with introduced species of corophiids.

John also examined specimens of *Cerapus tubularis* Cmplx from southern California. Don Cadien asked him to examine the anterior face of the head on these animals to see if John saw the same structural complex of ridges and subrostral spine Don had previously described on the taxonomic list-server and previous SCAMIT Newsletters (April and November 1999). John saw this structure, and was interested in the suggestion that it was related to use of the bases of the first antennae as an opercular device, closing the aperture of the tube constructed by these animals.

At the end of the day the amphilochid species *Gitana calitemplado* was viewed and images of this small animal were digitized by Dean Pasko. We all departed tired after two days of fruitful meetings. John Chapman stayed the rest of the week to review further materials from the museum collections. As in previous visits to SCAMIT meetings, we valued and enjoyed his contributions. Thanks John. [Thanks also to Dean Pasko and Lisa Haney for their assistance in preparation of the minutes from this workshop - Ed.]

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Southern California Association of
Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

November, 2001

SCAMIT Newsletter

Vol. 20, No. 7

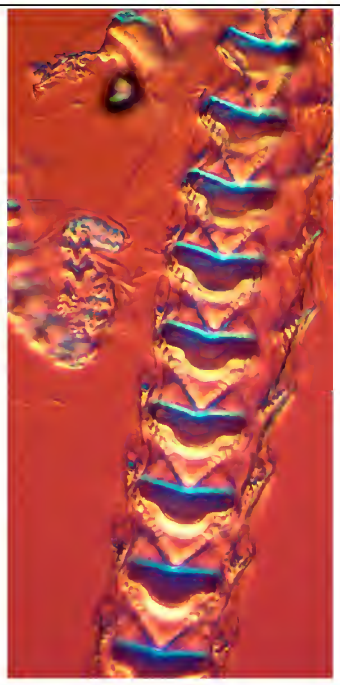
SUBJECT: No Meeting in December
HAPPY HOLIDAYS!!!

GUEST SPEAKER:

DATE:

TIME:

LOCATION:



I16(1) 7/5/01 90 ft.
Radular mount 40x
Dendronotus frondosus
Image by K. Barwick 25Oct01

NEXT MEETING:

11 January 2002. Dancing Coyote Ranch. Edwardsiids revisited. See the October Newsletter for details.

NEW LITERATURE

In recent years the utility of the gastropod radula as a species specific identification tool has been called into question. Studies have demonstrated both changes associated with use, and variation in shape of unused teeth related to food preferences of the individual snail. Jorgensen (2001) suggests that other, previously undervalued characters associated with radular structure may be more conservative, and better at reliable discrimination between related species. He demonstrates the utility of basal tooth characters with three species in the genus *Lacuna* from the Isle of Wight. These

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characters are not likely to aid in day to day identifications, but probably will feature in more in-depth studies of individual species or of group phylogeny if examined by others in the future.

Our guest speaker for this month, Dr. Angel Valdés, produced a very interesting examination of the probable paleohistory of the nudibranch genus *Phyllidiopsis*, using morphological characters and cladistic methodology (Valdés 2001). His analysis allowed the erection of several hypotheses concerning the origin and history of the genus. Since these animals produce no fossilizable remains an important line of hard evidence was unavailable. The results suggested two separate vicariant events, coincident with Tethyan and isthmian closures, had influenced the speciation in this genus. The author's interpretation seems to be externally supported by evidence in other groups which show a similar paleohistory buttressed in some cases by fossil evidence. Given the absence of nudibranch fossils, supported hypotheses which are both internally and externally consistent (such as these) seem to be the best we can do at paleohistoric reconstruction.

Even without a fossil history there is evidence to be had on the evolutionary history of a group. It is buried in the genes. Dayrat et al (2001) mine this load to produce a new cladistic analysis of the euthyneuran gastropods using 28S rRNA molecular data. The euthyneurans are those snails which have undergone detorsion somewhere in their history, uncrossing the nerves which the torsioning of the veliger larva introduced early in the evolutionary history of the phylum. This includes not only the marine opisthobranch groups, but also the landsnails, and some shelled marine groups. Their analysis reproduced much of the morphologically based tree presented by previous workers, but indicated a new clade which joins the anaspids with the gymnosome and thecosome pteropods. Methodological problems have been suggested to beset this analysis and we should wait for confirmation of these results by others prior to putting much credence in this suggested relationship.

Bivalve mollusks have an exemplary fossil record and this can be used to examine the results of evidence derived from analyses based on other types of characters. Using such morphological data requires, however, that there be a clear and consistent result. Canapa et al (2001) suggest that earlier morphologically based analyses have not produced consistent results. They provide an analysis based on 18S rRNA data (the entire gene was sequenced). The results suggest that the previous separation of the heterodont bivalves into veneroid and myoid types is not supportable, and that the myoids are firmly a part of the veneroids. A wait-for-confirmation approach seems indicated here as well.

In recent years a series of discoveries of exceptionally preserved material, particularly larval material from the Cambrian Orsten beds, has brought a previously unavailable developmental dimension to arthropod phylogenetic reconstruction. Schramm & Koenemann (2001) reexamine this data and suggest some alternative interpretations of previous results. Using evidence derived from developmental gene expression in extant forms, they address several competing models of the development of the arthropod limb, and the polarity of limb segmentation (i.e. multisegmented being plesiomorphic).

The relationship between developmental patterns and evolution (evo-devo) was reviewed by Scholtz (2001). He particularly concentrated on the expression patterns of engrailed, distal-less and Hox genes, and the evolutionary models that flow from their distribution. Continued investigation in this area (see for example Schramm & Koenemann above) should help us resolve fully the relationships between major groups. We are still not there, however.

In an attempt to further contribute to the debate on the basal relationships of the main arthropod groups, Hwang et al (2001) used data from mitochondrial proteins to probe the question. Their results strongly support a sister group relationship between Myriapoda and Chelicerata not resolved in earlier analyses. Their results also lent further support to the Pancrustacea, uniting insects and crustaceans as sister groups.

5 NOVEMBER 2001

There was a call from Vice President Leslie Harris for topics for upcoming meetings. Megan Lilly and Kelvin Barwick volunteered (under duress) to give presentations for the February meeting. Megan will be reviewing an unusual *Pentamera* sp., and a strange *Molgula* sp. and, if necessary, can review her latest synthesis of information regarding the occurrence of *Octopus veligero* in the Southern California Bight. Kelvin will be going over his recent findings in the world of Kamptozoans. If time permits Don Cadien will revisit the subject of the cumacean genus *Cyclaspis* in local and other waters. The subject title for the meeting will be "various and sundry phyla". As well, this meeting will be the locale of the great "*Pista"* exchange.

Dr. Eric Hochberg will be speaking on January 17, 2002 at the San Diego Shell club meeting. The tentative subject (at the moment) for his talk is reproduction in cephalopods.

The next SCUM meeting is coming up soon as well. Please see the attached announcement at the end of this newsletter.

Don Cadien then had the floor. He was happy to announce that Ed. 4 was completed and was in the process of being distributed. The emend list has already started and Don requests that as members find errors they email him with the details. These will accumulate, and will only be implemented when Ed. 5 is imminent sometime in 2004-5.

Dot Norris was with us from San Francisco. She passed around some information regarding the World Wildlife Fund's listing of 867 Ecoregions. She found it very interesting, but we were curious as to its limits to terrestrial environments. For more information go to their website:

http://www.worldwildlife.org/ecoregions/

Dr. Angel Valdés was then introduced as the guest speaker of the day. He is the new Curator of Mollusks at the Natural History Museum of Los Angeles County, replacing the retired and now emeritus curator Jim McLean. Angel started with a wonderful slide show and talk on opisthobranchs. Opisthobranchs are a highly derived group of animals. One character that they nearly all share is some level of reduction of the shell. However, this loss/reduction of shell seems to have occurred several times, in different lineages.

The first group to be considered were cephalaspids. Some within this group still have a shell and other species have lost it completely. Local representatives run the gamut from full shell into which the animal can contract (e.g. *Acteocina*), through internally shelled (e.g. *Philine*), to shell-less (e.g. *Philinoglossa*). Members of this group tend to be micropredators, feeding on small animals within the sediments.

The sacoglossans were seen next and again, some showed a reduction of shell while most members of the group have lost the shell entirely. It is within this group that one finds the only bivalve gastropods, *Julia* and *Berthelinia*, originally mistaken for clams. SCAMIT members see very few of these animals, which are restricted to the shallower depths where their algal prey can be found.

The anaspideans are the group which contains the largest species of opisthobranchs, some of which still retain an internal shell as a poorly calcified thin sheet, while others have none. California sports one of if not the largest

opisthobranch in the world: *Aplysia vaccaria.* This animal can weigh several kilos and grow to nearly two-feet long. Anaspids are uniformly algivores and are usually found at shallower depths as are the sacoglossans. Their favored algae are often the larger, heartier reds and browns which occur deeper than the delicate filamentous algae favored by sacoglossans. Some have been caught in relatively deep water, passively carried downslope with the drift algae on which they were feeding.

The next major opisthobranch order, the Notaspidea, is composed of two different appearing groups, one with external cap shaped shells, and the other with strongly reduced internal shells. Both are united by having a single gill plume under the edge of the notum posteriorly on the right side of the animal. Notaspideans, according to Angel, are going to be split into two groups. More on this in the future.

Nudibranchs, as their name implies, have naked gills exposed to the surrounding water. Location of gills varies between the different types of nudibranchs, with some exposed, and others sheltered in a cavity. In the dorids they are usually emergent from a branchial cavity on the dorsal side and towards the rear of the animal. In some primitive forms there may be multiple gill plumes in this location. A few forms have the gills pushed off the back and located under the notum at the rear end of the animal (i.e. in the corambids). In dendronotiforms there are multiple gills in tufts around the edge of the notum or on branched structures which arise from the notal border. In the arminids the gills are represented by a series of nearly vertical plaits along the sides of the animal. In aeolids respiration is typically over the entire surface of the animal, with the cerata serving to increase the surface to volume ratio of the animal and allow sufficient diffusive area to sustain this less specialized type of oxygenation. There is an amazing variation of shape and color in the group which extends far beyond the gills and covers all aspects of body form.

The highest diversity of opisthobranchs occurs within the Diversity Triangle which includes the tropical reefs of these areas of the Indopacific: Philippines, Papua New Guinea, and Indonesia.

Opisthobranchs occupy a variety of habitat, with most being benthic. There are a few pelagic species, some free swimming and some associated with floating objects or organisms. There has been a species discovered, *Dendronotus canteti,* which inhabits areas around hydrothermal vents at a depth of approximately 1500m. It feeds on hydroids but how it survives the corrosive effects of the hydrothermal vent habitats is unknown (a very good trick for an animal whose surface is unprotected by shells or other structures).

Most opisthobranchs are brightly colored at depths to 300m, but past that point, from 300-500m, most forms are white. It was from this latter depth that the "light-house" dorid, *Pharodoris phillipinensis*, was discovered. The common name is derived from the tall, tower-like elongation of the branchial collar, which raises the gills away from the back and up into the water.

The beautiful and varied color patterns seen in opisthobranchs may not always be species specific. In a number of cases there is mimicry of both color and pattern between different opisthobranchs, and also between opisthobranchs and other phyla. Angel showed us slides of an opisthobranch followed by a slide of a platyhelminth showing the exact or very similar color pattern. The theory is that these color patterns have been mimicked by other animals as they are a chemical defense advertisement, also known as aposematic coloration; it pays to advertise... Some of the noxious chemicals produced by opisthobranchs are being used in pharmacological research

trials, in regards to their use as cancricides, bacteriocides, and general biocides. For more information go to the National Cancer Institute's website.

Opisthobranchs who do not choose to advertise their unpalatability with bright colors and patterns are often particularly good at hiding via camouflage. We saw many slides in which the animal was almost impossible to discern from the background habitat. However, Angel pointed out that many animals who use camouflage also have a poisonous chemical defense system as well, in the off-chance that potential predators lack eyes.

Another type of defense system is seen in the aeolids which practice kleptocnidy. The nematocysts of their cnidarian prey are somehow digested without being fired (the mechanism remains unexplained) and then stored in the cerata of the animal. Once in place they perform their earlier function, being discharged actively by actions of the opisthobranch, or passively from physical manipulation of the cerata by a potential predator.

The dorids use the spicules in their body wall as a defense mechanism. The spicules are not from their sponge prey but are actually self produced. It is theorized that these spicules are secreted by the same cells that would secrete shells in other orders of molluscs. They may be more widespread than is currently realized as preservation frequently dissolves them entirely, leaving no trace.

Angel then briefly addressed the fossil record. Since opisthobranchs as a whole are nearly devoid of preservable parts, there is little in the way of fossil evidence to be had. There are, however, a number of primitive taxa which retain either an external or internal shell, offering the chance of preservation. In one such group the trend in shell reduction was for the shell to become smaller and less bulbous. In another, shell reductions followed the pattern of becoming more plate-like and flat, therefore covering less area.

The subject of radulae was then considered, illustrated by SEMs of the structure in question. Most have hooked-shape denticles, but there are those with straight denticles and those with extremely long shafts with denticles at the tip. As one might expect the form of the radular teeth and the radula itself are affected by the uses to which it is put. Animals who graze on sponges tend to have radulae very different from those which feed on cnidarians, and from those whose main food is plants. Some genera have secondarily lost the radula, in particular the group which feeds on sponges. These animals, instead, have tiny oral glands which secrete enzymes to dissolve the sponge and then the resulting soup is sucked up. This approach neatly sidesteps the thorny issue of handling the megasclere spicules which prominently defend many sponges.

The reproductive system of opisthobranchs contains the highest number of characters for use in systematics. The usual sexual state for all opisthobranchs is simultaneous hermaphroditism. This means that nearly all inseminations are reciprocal, with both partners wandering off to lay egg masses. Many species have modifications of the reproductive structures which allow the two partners to stay together during a prolonged copulation. This often includes spiny penes and spiny vaginas (at this point there was much cringing among the crowd at large). Large egg masses, often with several thousand eggs produced by each of the hermaphroditic partners, are laid following copulation and small larvae are later hatched. There are some instances of direct development within the egg to hatching as a miniature adult. In a few species (most notably in the sacoglossan *Alderia modesta*) the reproductive mode is flexible, with some eggs

having direct development, some producing small planktotrophic veligers, and some producing large non-feeding lecithotrophic larvae.

The skin can also be used as a systematic characteristic. As seen with SEM micrographs, the construction of the skin is very different between groups. Much ultrastructural research remains to be done in this area before comparisons across all opisthobranch groups can be performed.

Eating is an all important past time for most animals and opisthobranchs do not deviate from this pattern. Most use their rhinophores to sniff out food through sampling the chemical traces currents bring them. A common prey is sponges but some species are cannibalistic and swallow their smaller cohorts whole. Fish eggs, hydroids, octocorals, corals, anemones and ascidians are also consumed, while some species are herbivorous. Sacoglossans tend to be very specific feeders with prey items being filamentous or utriculous algae of various types. Occasionally a sacoglossan may use its specialized piercing radular teeth to feed on eggs (ala *Olea hansineensis*) but this is rare.

Symbiosis also occurs in the opisthobranchs. *Kaloplocamus* has special organs on its back which house bioluminescent bacteria, although how the nudibranch acquires these bacteria is not known. The aeolid *Phyllodesmium* feeds on soft corals and then harbors the zooxanthellae symbionts of the soft coral in its own tissues for their photosynthetic capabilities. Sacoglossans, similarly are known to extract chloroplasts from algae (a process known as kleptoplasty) and house them in their own tissues, utilizing their photosynthetic by-products as a food source and going for long periods without eating.

With that subject the talk was complete and there followed an enjoyable question and answer period with Angel after which we all had lunch. Upon returning to the lab we talked about SCAMIT species of nudibranchs and some specimens were exchanged and examined. Angel has been given the responsibility of working on the collections of opisthobranchs resulting from the MUSORSTOM cruises in the deep waters of the Western South Pacific. This, along with other projects (he is, for instance working on the opisthobranchs gathered in the British Virgin Islands as part of the Guana project mentioned in previous NL's), limits the time he currently has available to work on the local fauna. He is interested, however, and hopefully we can involve him in some of the more interesting animals which SCAMIT members have encountered in the last few years (such as the philinoglossid from off San Diego, and the *Akera* taken in the Channel islands during B'98).

JOB OPENING
ARIZONA-SONORA DESERT MUSEUM
SCIENCE WRITER/GRANT WRITER POSITION

The Arizona-Sonora Desert Museum (Tucson, AZ) is seeking a science writer to assist in science grant and report writing, and for general assistance in grants management. The position will begin at half-time (with benefits), but has the possibility of going to full-time in the near future. This position will report directly to Dr. Rick Brusca, Director of Conservation and Science at the Museum.

A minimum of a bachelor's degree (preferably in natural science) and 3 years experience is required. Good writing skills and self-direction are essential. A list of primary job functions follows:

(1) Research and writing grant/contract proposals, particularly to private foundations.
(2) Coordinate grant/contact submission process.
(3) Plan, arrange and participate in workshops and seminars to promote the proposal process

and grant-based research.
(4) Prepare, or assist in the preparation of research project reports and other writing projects.

For more information, contact Rick Brusca at 520-883-3007 or, rbrusca@desertmuseum.org.

PLEASE NOTE NEW EMAIL ADDRESS

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RECOGNITION COGNITION
or *What you see is what you already know to look for*

A redescription of a taxa often occurs as methods of observation improve. In previous years, most workers attempted to differentiate cirratulid polychaetes primarily with the use of dissecting microscopes. It was later found that use of a compound microscope produced a finer detail view of setae and this could be used to differentiate additional genera and species. More recently people have amplified and expanded other descriptions and diagnosis of polychaetes using biological stains such as methylene blue or green. These efforts of higher power examination and whole body stain patterns are all attempts to obtain new reliable visual cues that can be used to differentiate one taxa from another.

Changes in taxa recognition also occur when someone discovers anatomical features that were overlooked or unnoticed. This may require no new method of observation other than the realization that the feature is present if an observer knows to looks for it. Once notified of such new features, reexamination often demonstrates that the feature was present on already collected and identified specimens. Resulting re-identification of these specimens or a split in nomenclature contributes to the "taxonomic drift" found in long term survey programs. Examples of this situation include the following:

> Prostomial ridges on monticellinid cirratulids are clearly visible using standard methodology. Until these features were discovered for their taxonomic value, the descriptions and non-photo illustrations were typically lacking depictions of these features.

Prionospio lighti prostomial peaks are first reported and illustrated in1985. Specimens of this species are commonly collected and observed, but recognition of these peaks is not relied upon until they are more directly demonstrated as taxonomically important in 1994.

The hesionid *Podarkeopsis* sp A is described as possessing digitate lobes on most parapodia but these structures were not visually recognized by most taxonomists until they were demonstrated as diagnostic.

Terebellides stroemi was uniformly identified locally. When it was shown that only some specimens possessed very long and visible setiger 1 notosetae, taxonomists began to recognize this. The species *T. reishi* and *T. californica* both were described from this new recognition.

Aricidea ramosa was described and illustrated with a particular branched prostomial antennae. Workers used this description but did not notice that the local specimens had a very different branching form. This required no improved technique, just visual recognition of the difference between an illustration and the specimen.

In his book Phantoms in the Brain, neuroscientist V. S. Ramachandran from the Salk Institute and U.C. San Diego details several recent discoveries about the human visual system. Much like the genetic knock-out mice that demonstrate gene function through gene failure, Ramachandran studies people with organic neurological defects impacting vision and recognition. It is clear that humans do not take "photos" through their eyes and project them in their visual brain centers like a broadcast on a TV screen. Experimental evidence has shown that people see only a portion of the view available and their brains automatically "fill-in" details using complex cross communication between different portions of the distributed brain visual centers. This automatic process relies upon both visual memories and brain "expectations" to fill in details of the visual information. This is demonstrated by a perpetual blind spot in each eye created by the optic nerve. This blind spot is ignored by the brain visual centers. Close one eye and the blind spot is not obvious because the brain merely fills in a view with "other visual data" creating the illusion of a complete field of view.

A recent research effort from Dr's. Rosa and Werblin at U. C. Berkeley has demonstrated that relatively sparse visual information is transmitted to the brain from the retina from 10-12 separate "cellular channels". The brain then interprets this information as the conscious "complete" view. This complete view is actually filled in with other data. Retina cells are now known to process the light-based information into a picture extraction for reconstitution by the visual centers of the brain. Not all of what our brain recognizes as the "view" is transmitted by the retina.

Researchers Bachman, Malik, and Persona state that visual recognition of an object requires that the image and a memory of the object be associated for comparison. This unconscious use of a model to establish recognition of the object we "see" requires that we must first view an object before we can refer to its visual memory-based model. Given this system of vision, it becomes understandable how multiple observations of specimen conditions could fail to recognize a feature available for view. Once focused on, a feature may become a commonly seen condition.

Though we are all familiar with some optical illusions, a brief examination of their wide variety demonstrates that many different types of eye/brain puzzles exist. Consistent techniques of observation and specimen orientation may actually increase the likely hood that visual fill-ins occur and obscure recognition of otherwise viewable features. The retina provides a surprisingly limited view and we rely on a combination with visual brain center communication to finally see. This requires us to seek out new ways of recognizing morphological features. The use of whole body stains help create a new view. Using digitized photographs of specimens manipulated to provide false color images may also be beneficial in training our brains to recognize more of a specimen's true morphology. - Tom Parker (CSDLAC)

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Please visit the SCAMIT Website at: http://www.scamit.org

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Back issues of the newsletter are available. Prices are as follows:

Volumes 1 - 4 (compilation)..... $ 30.00
Volumes 5 - 7 (compilation)..... $ 15.00
Volumes 8 - 15 ..... $ 20.00/vol.

Single back issues are also available at cost.

SCUM VI: 6th ANNUAL GATHERING
SOUTHERN CALIFORNIA UNIFIED MALACOLOGISTS

Saturday, 26 January 2002
Farrand Hall – 10:00 to 4:00
Santa Barbara Museum of Natural History
2559 Puesta del Sol Road
Santa Barbara, CA 93105

Hosts: F.G. Hochberg, Henry Chaney & Paul Valentich Scott

SCUM is an informal association of southern California professional, amateur, and student malacologists & paleontologists, who are active or interested in research on mollusks. The purpose of the annual gathering is to facilitate contact and keep one another informed of research activities and opportunities. There are no dues, no officers, and no publications. SCUM is patterned after the Bay Area Malacologists (BAM), which is hosted by malacologists at different institutions each year.

This year's meeting will be hosted by the Santa Barbara Museum of Natural History.

- All persons interested in Recent and/or fossil mollusks are invited to attend.
- Presentations on current research topics or discussions on other molluscan related subjects are encouraged but should be informal and brief (10 minutes).
- A slide projector, LCD projector and/or overhead projector will be available for those wishing to present visual information.
- Please let us know if you want to present a talk so we can prepare a general schedule for the day.
- Coffee, tea, and breakfast goodies will be provided.
- We will break at noon. Box lunches will be provided at a cost of about $10. A number of restaurants are within a short drive if you want to go off campus for lunch.
- Parking in the museum's visitor lot is free.
- A map to the museum is available at: http://www.sbnature.org/htmls/sbmap.htm
- Please mention at the admissions desk that you are attending the SCUM meeting
- Please phone, FAX, or e-mail your RSVP so we will have enough breakfast snacks on hand for everyone. Order lunch at the same time.

For further information, contact:
F.G. Hochberg, Curator
Department of Invertebrate Zoology
TEL: 805-682-4711 x 318
FAX: 805-563-0574
E-mail: fghochberg@sbnature2.org

Southern California Association of
Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

December, 2001

SCAMIT Newsletter

Vol. 20, No. 8

SUBJECT:	Parasites and Commensals
GUEST SPEAKER:	none
DATE:	15 April 2002
TIME:	9:30 a.m. to 3:30 p. m.
LOCATION:	City of San Diego Marine Biology Lab 4918 N. Harbor Dr. #201 San Diego, CA

Carcinonemertidae?
SD Regional Station 2749 (1), 11 July 01, 54ft
Photo by M. Lilly 3/02

No meeting minutes are available for the December 2001 meeting which wasn't held. The delay in completing recent Newsletters means that the next meeting will be the April Meeting.

NEW LITERATURE

The difficulties encountered by most of us in species level taxonomy of nemerteans is equaled by the problems of dealing with higher taxon relationships. Sundberg et al (2001) use 18S rDNA sequence data to address these relationships. Sequence data from fifteen species was used, with each of two currently recognized classes and the four recognized subclasses represented. Several outgroups were tested, with annelids being chosen for the final analysis.

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SCAMIT Newsletter is not deemed to be valid publication for formal taxonomic purposes.

The results indicate monophyly of both the Heteronemertea and the Hoplonemertea, and paraphyly in the Palaeonemertea. The aberrant Bdellonemertea were associated most consistently with the hoplonemertines. Resolution of the Palaeonemertea remains for the future. The Anopla and Enopla were not supported as clades. As in most studies, wider taxon sampling and/or inclusion of data from other sequences may provide better resolution in subsequent analyses.

During predation by fish, ophiuroids are usually transported off the bottom and into the water column. As the fish spit them out to find a more comfortable orientation for swallowing them, or as the ophiuroids autotomize arms and begin to escape, an opportunity for behavioral change is presented. Pomory (2001) has experimentally tested the value of the "tulip position" to an ophiuroid falling through the water column. In this position the legs are all held together above the disk, reducing drag, and allowing the animal to fall fairly rapidly towards the bottom. Animals adopting this posture (in *Ophiopteris papillosa*, the experimental animal) had better survivorship than those who did not. Continual fish predation on ophiuroids should make sure that this behavior is selected for.

Feeding in thalassinid shrimp can vary from deposit feeding, (through surface detritivory), filter feeding, to bacterial farming in burrows, and carnivory. Coelho & Rodrigues (2001a & b) and Coelho, Williams & Rodriguez (2000) report on feeding observations on a series of thalassinids in the families Laomediidae, Callianassidae, and Upogebiidae. In each case observations were made on gut contents, behavior, and morphology of the feeding appendages of the species examined. Special attention was paid to the microstructure of the setae which cover these appendages, as their structure, density, placement, and orientation held considerable information on particle handling. The authors carefully examine their evidence, and in several cases provide alternative explanations of feeding mode or food substrate than those offered by previous authors.

While every organism has to feed, it isn't always easy. Conditions are so rough for one group of scavenging amphipods that they routinely have to brave anoxic conditions to feed. Experimental shipboard data indicate that *Orchomene obtusus* from Saanich Inlet (British Columbia) can survive up to 33 hours under anoxic conditions, and routinely survive 12 hour exposures. This allows them to make feeding excursions to the anoxic depths of the inlet. Saanich is a fjord with a shallow entrance sill backed by much deeper water further into the fjord. Lack of deep circulation and formation of a stable mid-depth oxycline leads to frequent complete anoxia inside the fjord. Within this environment food falls present both a unique resource and a serious challenge for mobile scavengers.

While high abundances of *O. obtusus* were found on the anoxic bottom of the fjord, a second area of elevated density was located in mid-water at 100 to 125m. At this depth oxygen saturation was 0.2 to 1.5%. De Robertis et al (2001) conclude from their data that the high resident population of *O. obtusus* utilizes the food resources provided by the deep anoxic waters, and their own tolerance of anoxia, to great advantage. After feeding in deep anoxic waters they vertically migrate back to the mid-depth oxycline and recover from their oxygen starvation before plunging again for another meal. The prevailing anoxia retards the decomposition of food falls and excludes both potential *Orchomene* predators and other scavengers with higher oxygen needs.

Dauby et al (2001) consider the ecological role of amphipods in the benthic community of the eastern Weddell Sea. They provide information on gut analyses of 29 species in 12 families. Amphipods have diversified in this

area, fulfilling a number of roles. Even the 29 species examined here are but a small portion of the over 820 species recorded from the Southern Ocean. Much additional investigation of amphipod dietary habits and guts will be needed before their contributions to benthic food webs in the Antarctic is clear. The discussion of gut contents for the species examined is of general interest, but not directly applicable to ecological studies in the North Eastern Pacific. The same families and many of the same genera occur in the Southern California Bight, but the species complement is completely different.

WORMS AND TASTY FISH
Tom Parker, CSDLAC

In the August 2001 newsletter there was a brief mention of the publication by Fielman et al 2001entitled: "Polychaete indicator species as a source of natural halogenated organic compounds in marine sediments". This paper, and others recently published, have investigated the formation and metabolism of bromophenols and other halogenated compounds in polychaetes. Ecological implications for these results have included microbial sediment control by infauna, protection from predators, and sensory cues for recruitment events. Several researchers have applied a somewhat different perspective.

Robert Lindsay and others have determined that saltwater and freshwater fish or shrimp have a clearly different flavor from each other due to the presence of bromophenols in the saltwater species. He has experimented with the addition of minute (nanogram) quantities of bromophenols to freshwater fish and shrimp food and found that flavor was clearly enhanced. Freshwater crayfish taste more like lobster and freshwater salmon or trout take on a more preferred seafood flavor. Lindsay has recognized that polychaetes naturally aggregate some bromophenols through enzymatic processes and has begun characterizing their constituents for future use as farmed fish food additives. If you'd like to learn more about bromophenols from worms and tasty seafood please refer to Whitfield et al 1999, Raloff 1997, or Siderhurst 2001, and the further publications referenced in them.

WORMS IN ICE(land)
7th International Polychaete Conference
Reykjavik, Iceland, July 1-6, 2001

The conference was held at the University of Iceland. The University of Iceland, the Marine Research Institute and the Icelandic Institute of Natural History organized the conference. Financial support was provided by the Ministry for the Environment, the Ministry of Science, Education and Culture and Landsbankinn (the National Bank of Iceland). There were 160 participants registered from 29 countries. There were 52 oral presentations and 99 posters listed in the program. UNESCO supported 12 students from Eastern Europe, Asia, and South America to attend the conference. The venue at the University of Iceland (the University cinema complex) was very nice with ample comfortable seating and multimedia available for presentations. The concession area was large enough for displaying posters and providing refreshments.

Registration began on Sunday afternoon, continuing Monday morning. Dr. Elin Sigvaldadottir opened the conference followed with remarks by representatives from the various sponsoring institutions and SCAMIT member Dr. Don Reish, President of the International Polychaetological Association. There were many wonderful talks and posters presented Monday, Tuesday, Thursday and Friday. They covered a variety of topics related to polychaetes including systematics, life history, genetics, cladistics, community studies, anatomy, and feeding. For those interested in specifics, a full listing of abstracts for oral and poster presentations can be found at the conference website at:

http://www.ni.is/7IPCI/

Of interest to SCAMIT members were talks dealing with scale-worm systematics, especially the Polynoidae (Fauchald and Barnich & Fiege). One paper, presented by Evind Oug, highlighted problems with taxonomy and name usage in environmental monitoring studies in the North Sea. Familiar names such as *Chaetozone setosa*, *Spio filicornis*, *Capitella capitata*, and *Cirratulus cirratus* were noted as problematic. Another presentation by Patti, Gambi & Palumbi related the change in status of *Owenia fusiformis* from cosmopolitan species to species complex by showing genetic differentiation related to larval dispersal.

Jim Blake and Brigitte Hilbig presented their Antarctic research on polychaetes in separate talks. Jim presented his work on reproductive biology, larval development and ecology, of selected benthic polychaetes from McMurdo Sound, Antarctica. Brigitte presented her initial work on polychaete communities from the Weddell Sea, Antarctica. SCAMIT member Don Reish, presented on radiocarbon dating and metal analysis of fossil and living calcareous tubes of local *Protula*.

The many posters were presented in two sessions (Monday-Tuesday and Thursday-Friday) and covered a variety of topics, including descriptions of new species. Of special interest to SCAMIT members were posters on *Chaetozone* species from the NE Atlantic by Chambers & Woodham; the status of the *Spiochaetopterus costarum* species complex by Bhaud; the local recruitment of *Owenia fusiformis* and erection of several new species of *Owenia* from the Mediterranean Sea by Koh & Bhaud; and the diversity and structure of the polychaete fauna of Todos Santos Bay, Baja California, Mexico by Díaz-Castañeda.

On Monday night, there was a very nice reception hosted by the Ministry of Fisheries at the Hotel Borg. I made the mistake of eating before the reception and did not have much room for the wonderful hors d'ouvres provided. Beer and wine were freely available and you could hardly get your glass half-empty before a waitress would come by and fill it again. There was lively conversation in large and small groups of people. The two hours went by far too fast and soon our glasses were empty and it was time to go.

The mid-conference tour took us to the geyser district east of Reykjavik via high- clearance all wheel drive buses. About two hours out of town we headed off the main road and went off-roading. At this point one could begin to see why the buses had such high clearance and all wheel drive as we forded several glacier feed streams, some of which were 2-3 feet deep and flowing swiftly. At the end of the road there was a park office and lodge with simple indoor overnight accommodations. The conference photo was taken before lunch along a stream near the lodge. It made for a nice picture. We lunched at the lodge and then had the choice of three nature hikes. One hike to the top of a nearby mountain (hill) with views, another along the river with views of waterfowl, and a third along a trail to the next valley with many wildflowers along the way. I took the valley trail and enjoyed the hike and views of nature. On our way back we stopped at a glacier fed lake and a glacier fed waterfall.

The conference banquet was held at Versalir on Thursday night. It was a nice hall with casual seating before dinner and plenty of tables for seating at dinner. A no host bar helped relax the crowd while people mingled and chatted with each other. After opening comments from Elin Sigvaldadottir, everyone was treated to a smorgasbord of Icelandic dishes. There were several ways to eat fish: pickled, fried, poached, and smoked. There was even seabird. Some report it was Guillimont and others say it was Puffin. Either way it tasted like fishy liver to me. It is always interesting to see the food preferences and presentations of other countries, with similarities and differences to your own.

After dinner, we were treated to some traditional Icelandic songs by a vocalist with piano accompaniment. They played 3-4 songs. Both were excellent musicians. Then things began to heat up as canned rock and roll music was played for dancing. These scientist-types can really shake it on the dance floor when properly motivated. Dan Dauer was especially "reserved" as he showed Maria Gambi some dance moves.

Friday afternoon brought discussion and presentations regarding the business of the association and closing ceremonies. Don Reish, association president, presented the first Presidential Address highlighting advances in polychaete work. A change to the bylaws was proposed to allow for the election of honorary members. Three honorary members of the association were then elected. They were Drs. Gesa Hartmann-Schroder, Marion Pettibone, and Raisa Levenstein. This was followed by a special presentation by Danny Eibye-Jacobsen honoring a member for their significant contributions to the association. The member honored was Geoff Read who initially organized *Chaetozone*, maintains the Annelida website, and monitors the annelid discussion group. Geoff received a standing ovation from the audience and was given a very nice book on the natural history of Iceland. The selection of the new association president was the next order of business. Maria Gambi and Jim Blake were nominated from the floor. Maria Gambi was elected to serve the next three-year presidential term. Selection of the venue for the 2004 conference followed next. Jim Blake presented a proposal to host the conference at Portland, Maine in August 2004. Guillermo San Martin presented a proposal to host the conference in Madrid, Spain the first week of July 2004. After the presentations and questions, the members present voted to hold the 8th International Polychaete Conference in Madrid, Spain. Guillermo and the other 8th IPC committee members will be working hard to organize the conference and distribute information during the next three years. Stay tuned! - Larry Lovell, SIO.

NOMINATIONS

Although it hardly seems credible, it is again time to call for nomination of SCAMIT officers. I hope that some will see fit to put forward their names as potential candidates, or that others will do so for persons they feel would be both willing and able to serve. The existing slate of officers will run again, with one exception. The Treasurer, Ann Dalkey, who has served in that capacity since SCAMIT's inception, is finally laying down her ledger and passing the responsibilities of her position to another. All of us should honor her for her long and faithful service to the organization and its members. She retires as treasurer, but continues with duties at Hyperion. I am sure she will remain as active in SCAMIT as her time permits. Thanks Ann.

Nominations can be put forward at SCAMIT meetings, via letter to the Secretary, via e-mail to any of the officers, or via messages left on the website. They should be accompanied (or shortly followed) by a brief CV describing the candidate for inclusion with the election information. This should be sent to the SCAMIT secretary Megan Lilly at **mlilly@sandiego.gov** or Megan Lilly, City of San Diego Biology Lab, 4918 N. Harbor Dr., #101, San Diego, CA 92106.

LITTLE HELP?

On the front cover of this newsletter is an animal that Dean Pasko and I (Megan Lilly) refer to as Carcinonemertidae for lack of a better option (this animal was also seen at a 428ft station). If anyone else has an opinion on the identity of this beast, whether it be in agreement with our best guess, a rebuttal, or would just like more information regarding this animal, please contact me at mlilly@sandiego.gov. Any help would be appreciated.
- Thanks, Megan Lilly

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Please visit the SCAMIT Website at: http://www.scamit.org

SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers e-mail address

President	Ron Velarde	(619)758-2331	rvelarde@sandiego.gov
Vice-President	Leslie Harris	(213)763-3234	lhharris@bcf.usc.edu
Secretary	Megan Lilly	(619)758-2336	mlilly@sandiego.gov
Treasurer	Ann Dalkey	(310)648-5544	cam@san.ci.la.ca.us

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Southern California Association of
Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

Jan/Feb, 2002

SCAMIT Newsletter

Vol. 20, No.9/10

SUBJECT:	Parasites and Commensals
GUEST SPEAKER:	None
DATE:	15 April 2002
TIME:	9:30 a.m. to 3:30 p. m.
LOCATION:	City of San Diego Marine Biology Lab 4918 N. Harbor Dr. #201

Phyllophoridae sp SD1
I-21(2), 7-5-01, 134ft
photo by M. Lilly 2-7-02

JANUARY MEETING MINUTES

The meeting opened with President Ron Velarde noting that the most recent edition of The Veliger contained a review of local Saccoglossan opisthobranchs.

Next to have the floor was our host for the day, John Ljubenkov. He reminded those present that *Obelia* sp A has now been identified as *Laomedea calceolifera* Alman, 1872. John will be sending out a voucher sheet on this animal.

Meg Daly was then introduced as the guest speaker of the day. She is working in a post-doctoral position at the University of Kansas studying the evolution of Edwardsiids. She is currently working on a manuscript that deals with four or five undescribed Edwardsiids from the Eastern Pacific. She announced that the next ICCB (International Congress on Coelenterate Biology) will be held from 6 - 11 July 2003 in Lawrence, Kansas. She then

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proposed the idea that many of the PhD students working under PEET grants should get more involved with SCAMIT and other functional taxonomy organizations. It would allow them to work directly with taxonomists who are doing the identification work for environmental monitoring programs and environmental impact studies, etc.

Next she began an informative discussion of Edwardsiids. What makes the Edwarsiids unique is the fact that they always have only 8 macromeres; the more common count being 10 - 12.

They have a "bizarre" biogeography in that they are primarily benthic, burrowing, and deep water. They are a well known group from areas where people have looked for them, but are considered relatively limited in range. Meg stressed her belief that Edwardsiids are much more common and diverse than is now known, it's more a lack of study than a lack of the animal.

She then distributed a wonderful hand-out to assist us in the identification of Edwardsiids and other anemones. There were drawings as well as a glossary of terms and even a key to the more common anemones off our shores.

After Meg's talk we broke for lunch, which was wonderful as it was consumed sitting outside at the beautiful Dancing Coyote Ranch.

The afternoon was spent reviewing specimens. Meg had brought some live anemones for us to examine under the scope. As usual, everyone was excited by the chance to view something that was not fixed and preserved. John then shared some beautiful specimens of the various Edwarsiid species that we see in our monitoring programs. Once we had a feel for what the animals were supposed to look like, we then tackled the challenge of actually trying to identify the typical, small, damaged specimens we so often see in our samples. All in all it was a very informative and successful meeting and I (M. Lilly) for one, left with a much better sense of the Edwarsiids and how to identify them.

FEBRUARY MEETING MINUTES

The February meeting was called to order by president Ron Velarde at 9:35 a.m.. The first person to speak was vice president Leslie Harris. She reminded everyone present that today was the day of the "great *Pista* exchange". There will be a *Pista* workshop to go over the results of the exchange and other information on 11 March at the LACMNH.

Don Cadien then proposed a meeting that would address the issue of parasites and commensals. He would like us to inventory what parasites are being seen, which agencies are reporting them and in what fashion. He reminded us that these animals probably affect the ecology of our investigated areas more than we acknowledge or are aware. He pointed out that our monitoring programs are starting to change and are moving into a more experimental phase versus the traditional approach of strict point source monitoring. It is a good time to suggest looking at parasites as potential indicators of environmental conditions. The meeting has been scheduled for 15 April at the City of San Diego's Marine Lab in Point Loma.

As for future meetings, May is still open and needs a topic. An ascidian meeting will be held 17 June at the City of San Diego. Megan Lilly will be reviewing the various ascidians seen in their (CSD) standard monitoring programs, as well as those species encountered in the bays, surveyed during the B'98 program. This meeting is still being organized and there may be other speakers (hopefully) discussing encountered ascidians. July is still open and needs a topic. August there will be a Nereid meeting on the 12th at the LACMNH. It was felt that we need a problem mollusk meeting

and a problem echinoderm meeting, hopefully with Dr. Hendler. However, these were just mentions and will need to be more thoroughly fleshed out before dates are set.

Ron then had the floor and announced upcoming meetings. The SCAS meetings will be held 7-8 June at Clairemont College. The results of the B'98 survey will be presented at this forum. July 20-24 will be the dates for the annual WSM meetings. They will be held at Asilomar, near Monterey California.

He mentioned that the SCUM meeting in Santa Barbara had been a success and thoroughly enjoyed by those attending. A list of attendees and subjects was passed around. There is, at the moment, a host for the next SCUM meeting, but Ron Velarde volunteered SCAMIT as a back-up host in case of complications.

Don reminded the officers present that it was time to call for nominations for the looming elections. The candidate biographies are included with this newsletter and the ballot is attached at the end. We have two candidates running for the office of President this year! Ballots will be due by April 31st, and as always, write-in candidates are always welcome. Let's make the elections interesting, shall we?

A discussion then ensued as to what happens to the digital images that are often captured at the SCAMIT meetings. Leslie Harris, for one, would like to be given these digital images for future reference and study. The City of San Diego's lab is the actual owner of the equipment that captures the images and it is usually Kelvin Barwick or Rick Rowe taking the pictures, at least at the polychaete meetings. Kelvin said he would be glad to distribute the images, but there needs to be some standards set on how the images should be saved (format), which ones, what to name them, how should they be sent, etc, etc. Leslie and Kelvin agreed to talk about this further and try to set some protocol for capturing, naming, saving, and sending the digital files.

With that, the actual working part of the meeting began. Megan Lilly began with her presentation of a new holothuroid. The animal has been given the provisional name of, Phyllophoridae sp SD 1. In external appearance it looks very similar to *Pentamera populifera*, however, if one focuses down on the animal, it is not as obviously "spiculose" (one does not see the tops of table spires protruding through the skin). Upon doing a tissue mount, it is seen that the ossicles are actually quite different from those of *P. populifera*. The tables are irregular and usually contain four-large holes at the center. The supporting tables, in all animals to date, are absent or so rare that one has yet to be seen. The largest animal collected, (approx 2.5 cm), was mostly lacking ossicles, indicating that they perhaps disappear with growth. It also was slightly darker in color than the smaller two specimens, perhaps indicating a color change with growth as well. Upon examining the station data for the three animals collected, Ron Velarde noted that they are occurring at the relic red sand stations. The sediment at these stations is very different from all other habitats that we sample and this is not the first strange echinoderm that we've found in this area. We also find the relatively rare urchin, *Nacospatangus laevis* at these stations. A voucher sheet is being made of this animal and hopefully some more professional opinions will be given to its true identity. If anyone is interested in obtaining a voucher sheet of this animal please contact Megan Lilly at mlilly@sandiego.gov or at 619-758-2336.

Next up was a provisional species of ascidian, *Molgula* sp SD 1. This animal appears very similar to *Molgula napiformis*, but often possess a cluster of smaller root hairs on the posterior aspect of the tunic instead of having a long stolon with many smaller root hairs branching off (this can be variable however). The most striking difference in the two species is that *M. napiformis* has the gonads situated outside the primary intestinal loop (Lambert 1993) whereas *M.* sp SD 1 has the gonads

positioned within the primary intestinal loop. According to Van Name (1945) this positioning of the gonads places the animal in the subgenus *molguloides*. It appears that there will be an ecological separation of the two species with *M. napiformis* occurring at the offshore stations (>200ft) and *M.* sp SD 1 occurring at stations with a depth of less than 200ft. However, this is only being considered as a potential difference and more research needs to be done to confirm this. The difference in occurrence could be related to sediment size rather than depth. A voucher sheet is being created for this animal as well. If you are interested in receiving a copy contact Megan Lilly (see above).

Kelvin Barwick then had the floor and he gave a wonderful and in-depth talk on the biology of Entoprocts. He had many wonderful digital images of these small animals living commensally on different species. We were all impressed with his photographic capabilities and although these animals are not included in the monitoring data in any fashion, it was still interesting to see and hear about such a little known group of animals.

After Kelvin's talk we all broke for lunch. Upon returning, the *Pista* exchange was conducted and everybody left clutching bundles of polychaetes.

PISTA MINUTES

The Great *Pista* Exchange: Personnel from several agencies, consulting companies, and institutions were present to exchange specimens of northeast Pacific species of *Pista*. Participating groups included the City and County of San Francisco, City of Los Angeles, City of San Diego, Los Angeles County Sanitation District, Scripps Institute of Oceanography, and the Natural History Museum of Los Angeles County. Additional specimens were sent by Howard Jones, Marine Taxonomic Services.

First, Leslie Harris handed out an information sheet on *Betapista dekkerae*. Mistakes were made in the original description which prevent correct identification of this species. There was some discussion as we reviewed its characters. This sheet is not included with this newsletter as she will present a revised version at the next meeting.

Our discussion, led by Leslie, centered around a table of characters she prepared for *Pista agassizi*, *P. alata*, and *P. percyi*. We methodically went through this list and discussed the character states for these and several other species of *Pista*. This exchange of information was intended to aid us in standardizing our identifications of our exchange specimens.

First, we discussed the differences between *P. agassizi* and *P. percyi*. *P. agassizi* has lappets through segment 7, and has a pronounced dorsal ridge on segment 4. The holotype, taken off Mendocino, is the only specimen known of this species. *P. percyi* occurs from northern Baja California, Mexico, to British Columbia. It has lappets through segment 6, and has some variation in the shape of the dorsal ridge on segment 4. (Information from Hilbig 2000; the lappets on segments 5, 6, and 7 are referred to as ventral frills). Lappets are sometimes difficult to distinguish from folds produced by specimen contraction. Folds are thick and rounded while lappets are thin, flat structures which can be lifted away from the body using a probe or forceps' tip.

The presence, relative size, and shape of the lateral lappets are important characters. For example, the otherwise similar *P. elongata* and *P. pacifica* are easily distinguished by the presence or absence of a lappet on segment 4. *P. wui* has medium-sized lappets on segments 2, 3, and 4 which usually protrude laterally while *P. bansei* has small lappets only on segments 2 and 3 which are tightly pressed to the body.

Transverse dorsal folds or lappets are sometimes present on segments 4 (or 3, but not in local species). In *P. alata* the dorsal lappet is on segment 4 and forms an anteriorly-projecting triangle. A simple thick fold occurs on *P. agassizi* while in *P. percyi* the structure varies from a simple fold to a pronounced lappet with dorsolateral notches.

The next character of *Pista* that we reviewed was branchiae. It was noted that there is some variation in the number of branchiae for species of *Pista* (Saphronova 1985). Leslie gave us a detailed description of branchial shapes, complete with diagrams. The wrinkles that we often see in preserved specimens indicate the branchiae are contracted. In a more relaxed specimen, branchiae would appear smoother and have more space between the branches. Leslie passed around her drawing of contracted and relaxed *Betapista dekkerae* branchiae to illustrate the difference. Just to standardize our terminology we divided the branchiae into two main patterns: arborescent and single-stem. First, we talked about the arborescent (= dendritic) branchiae. Species that have the arborescent type are *Pista percyi*, *P. agassizi,* and *P. disjuncta* Moore. In these species, the main stem and subsequent branches divide repeatedly; the division may appear to be dichotomous, pinnate, or irregular. Single-stem (= club-, ramrod-, or pompom-shape) branchiae have a single, central stem with short branching filaments arranged in spirals around it. Some species of *Pista* that have this type of branching are *P. bansei*, *P. cristata*, *P. moorei*, *Pista* type C Harris, and *P. disjuncta* sensu Hartman.

Following the chart of *Pista* characters, notopodia were up next for discussion. Setae consist of smooth limbate capillaries, usually bilimbate, which occur in two rows. It was noted that the relative size of the tori and whether this changes from the anterior to the posterior thorax may be useful.

Then we talked about thoracic neuropodia, and it was noted that here too the length of the torus may be a useful character, as well as the relative number of uncini per torus. More specifically, we should check to see if the neuropodia reach to the ventral shield and if they are of subequal length from the anterior to posterior thorax or diminish in size.

For a long time, the presence of long-handled hooks in the thorax was used to distinguish the genus *Pista* from other terebellid genera. There has been a great deal of recent discussion concerning this character, and it is no longer considered to be of value at the generic level. The degree of chitinization of the handle (and hence its length) has been found to vary between adults and juveniles, between specimens of the same species, and even within in the same neuropodium (Saphronova 1985). The shape of the anterior uncini, however, appears to be a stable character (Saphronova 1985). Some species have robust elongated hooks with the crests reduced or completely lacking, and much larger than subsequent uncini, such as *P. elongata* and *P. pacifica*. *Pista cristata*, the type of the genus, has typical terebellid uncini with several rows of small teeth in a crest above the main fang and which are subequal in size to those following.

The number of ventral shields, their shape, and how they stain, appear to be stable characters. Number and shape are best determined with methyl green.

Methyl green staining is invaluable. Many of our species have distinctive staining patterns. Leslie's illustrations of these will be handed out at the next meeting. Her illustrations were drawn either from type material or specimens compared directly to the types.

Tube morphology is also species-specific in some cases. *P. wui* has a thick mud- or silt-walled tube without any attached material. *P. elongata* and *P. pacifica* have solidified mucus tubes covered with sand and bits of detritus and

unique tube openings. In the former the opening is hidden among a reticulated, sponge-like network formed by bits of detritus and shell held together by mucus; the latter has a lateral opening surrounded by simple or sparsely branched rays largely composed of mucus-cemented sand grains.

Two types of nephromixia (commonly reported as nephridial papillae or pores) are present in terebellids: anterior excretory nephromixia (ENMX) and thoracic reproductive nephromixia (RNMX). The ENMX are found anterior to a septum at the posterior margin of segment 4, with openings either on the dorsal surface of the segments or on the lappets. RNMX are located posterior to the septum on segment 4; their dorsal openings are slightly posterior to the notopodia. (Information taken from Smith, 1992; an excellent discussion of nephromixia in *Pista* and for terebellids in general). *Pista* species can be divided into two groups with different arrangements of nephromixia. The first group, typified by *P. cristata*, has 1 pair each on segments 3, 6, 7. *P. percyi* belongs to this group. In the second group the number and placement of nephromixia may be species-specific, as the number of pairs is variable, occurring from segment 2 to 17 (LH, pers. obs.). *P. elongata* and *P. pacifica* belong to the second group.

JOB ANNOUNCEMENTS

(1) We are seeking a research colleague interested in a long term commitment to support research projects for the Benthic Ecology Lab at Moss Landing Marine Laboratories in Monterey Bay, CA. We are exploring benthic ecosystems at both poles, the deep sea, and mostly along the central and northern CA coast, including adjacent watersheds. We have an active program in freshwater and sand dune restoration. Possibilities abound for pursuing individual research. Skills required are people and data management and preparation of technical reports and peer reviewed articles. Computer empathy is essential (Mac & PC). GIS experience is desirable, or it must be developed early. Duties include tracking benthic invertebrate samples and lab personnel; and overseeing workup of infaunal and video data.

Experience in marine or freshwater invertebrate taxonomy is desirable. At least a BS is preferred. Starting salary $40-$50K/yr, negotiable. Send a letter of introduction and a resume including three references (no letters) by email to Jim Oakden, **oakden@mlml.calstate.edu.**

(2) BIOLOGIST, GS-0401-07 (WR-NF-DEU), GS-0401-07/07
Announcement Number WR-2002-0119
Located in Menlo Park, CA
Announcement Closes on: 03/25/2002
The full text of the vacancy is at:

http://www.usajobs.opm.gov/wfjic/jobs/TP4249.HTM

CANDIDATE BIOGRAPHIES

PRESIDENT
Ron Velarde

Ron is the current President of SCAMIT and a past Vice-President; he has been a marine biologist with the City of San Diego since 1983 and currently is the supervisor of Benthic Taxonomy for the Ocean Monitoring Program. His taxonomic interests include most groups, especially polychaetes and nudibranch mollusks. He earned his B.S. degree in Marine Biology from California State University, Long Beach, in 1976, and did post-graduate research on the systematics and ecology of autolytid polychaetes.

PRESIDENT
Kelvin Barwick

I graduated with a B. S. degree in wildlife and fisheries sciences from Texas A&M University in 1983. Currently I work for the City of San Diego's Ocean Monitoring Program as a marine biologist/taxonomist. My taxonomic specialties are Mollusks and Polychaetes. In the past I have worked both as an independent taxonomic consultant, and for private environmental consulting firms, accumulating over 14 years experience in invertebrate taxonomy. I have been an active participant in SCAMIT for over 10 years and served as its Secretary in 1991-92. If elected I will bring a new perspective to SCAMIT by looking to the future. I would consult with you, the members, about the directions and goals you envision for our organization. This would be my mandate.

VICE-PRESIDENT
Leslie Harris

Collections manager of the Allan Hancock Foundation Polychaete Collection, at the Los Angeles County Museum of Natural History. Ongoing research centers on taxonomy of the polychaete fauna of pacific North America, polychaete-algal associations (especially in *Macrocystis*), introduced species, and Caribbean reef polychaetes.

SECRETARY
Megan Lilly

Graduated from Humboldt State University in 1991 with a B.S. in Marine Biology. From 1991-1993, worked at the Santa Barbara Museum of Natural History where the taxonomy of marine mollusks was studied under Dr. Eric Hochberg, Paul Valentich Scott, and Henry Chaney. Currently working as a marine biologist for the City of San Diego's Ocean Monitoring Program. Specialities include echinoderms, miscellaneous phyla and mollusks with an emphasis on cephalopods.

TREASURER
Cheryl Brantley

Cheryl is a marine biologist with the County Sanitation Districts of Los Angeles County. She has worked for the Districts for 16 years primarily as a polychaete taxonomist. She graduated with her B.A. degree in Aquatic Biology from the University of California, Santa Barbara in 1985. She has formerly served as Secretary of SCAMIT from 1994-98.

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Secretary	Megan Lilly	(619)758-2336	mlilly@sandiego.gov
Treasurer	Ann Dalkey	(310)648-5544	cam@san.ci.la.ca.us

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BALLOT FOR SCAMIT OFFICERS 2002-2003

Vote for one (1) nominee for each office. Please mail or return completed ballot to Leslie Harris by April 31st, 2002. You may return it to the Secretary or other attending officers at the April meeting. The address to mail it to is:

Leslie Harris - Worm Lab
Los Angeles County Museum of Natural History
900 Exposition Blvd.
Los Angeles, CA 90007

President - The president presides at all meetings and represents SCAMIT in external business affairs.

____ Ron Velarde
____ Kelvin Barwick
____ Write in: _____

Vice-President - The Vice-President chairs ad hoc committees, supervises the specimen exchange, tabulates election ballots, and fills in for the President as necessary.

____ Leslie Harris
____ Write in: _____

Secretary - The Secretary keeps minutes of the meetings, is responsible for the newsletter, and preparation of the ballots.

____ Megan Lilly
____ Write in: _____

Treasurer - The Treasurer collects dues, makes disbursements, keeps financial records, and makes an annual statement of the financial status of SCAMIT.

____ Cheryl Brantley
____ Write in: _____

2002-2003 SCAMIT Meeting Topics - Please suggest any topics you deem worthy of a SCAMIT meeting.

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

March, 2002

SCAMIT Newsletter

Vol. 20, No. 11

SUBJECT:	Curatorial Concerns: Ideal and practical methods to take care of your archived specimens.
GUEST SPEAKER:	None
DATE:	13 May 2002
TIME:	9:30 a.m. to 3:30 p. m.
LOCATION:	Los Angeles Museum of Natural History Worm Lab 900 Exposition Blvd.

Ophiopholis bakeri
(from a trawl off San Diego)

MARCH MINUTES

The March meeting minutes will not be presented in this newsletter, but will follow shortly in the April newsletter. There was copious amounts of information generated concerning *Pista* and as of yet those minutes and images are still being compiled and edited.

PARTY TIME!

If you have not recently visited the web-site, please take note that the SCAMIT 20th anniversary party is now scheduled for 1 June at Marine Biological Consultants in Costa Mesa, CA. Please mark your calendars. Invitations (with more detailed information) are being produced and will be distributed soon.

FUNDS FOR THIS PUBLICATION PROVIDED, IN PART BY
THE ARCO FOUNDATION, CHEVRON, USA, AND TEXACO INC.
SCAMIT Newsletter is not deemed to be valid publication for formal taxonomic purposes.

A REQUEST

Ann would like to make a SCAMIT photographic scrap book. She's interested in any SCAMIT photographs in, print, negative, slide, or electronic format. She will return prints, negatives, and slides. The album will be generated electronically and a CD archive will be created for SCAMIT. Please either email your images to her at: **cam@san.lacity.org** or mail them the traditional way to:

Ann Dalkey
Environmental Monitoring Division
12000 Vista del Mar
Playa del Rey CA 90293

SCAMIT T-SHIRTS AND MUGS

It has been discovered lately that SCAMIT still has a large inventory of coffee mugs and t-shirts. These were made with the beautiful blue SCAMIT seastar logo several years ago as a fundraiser. If any one is interested in either a t-shirt or mug please contact (future) SCAMIT treasurer Cheryl Brantley (310-830-2400 x 5500 or **cbrantley@lacsd.org**) to place an order. T-shirts are $8.00 all sizes and mugs are $6.00 each or 4 for $22.00; 6 for $30.00. We have over 2 dozen mugs left and the table below lists the t-shirt inventory. Not only will the purchase of one of these items help to support SCAMIT financially, but it will also help reduce the storage space needed for these items, which is desperately needed.

Women's	Sm	Yellow	1
Women's	Sm	White	2
Women's	Med	Yellow	2
Women's	Med	White	3
Women's	Lg	White	4
Men's	Sm	Yellow	1
Men's	Med	Yellow	7
Men's	Lg	White	2
Men's	Hat	Blue	1
Men's	Hat	Gold	2

JOB ANNOUNCEMENT:

Invertebrate Zoologist/Systematist at the Assistant Marine Scientist level in the newly established Southeastern Regional Taxonomic Center.
Location:
The Southeastern Regional Taxonomic Center (SERTC) is located in the Marine Resources Research Institute at Fort Johnson, in Charleston, SC (http://www.dnr.state.sc.us/marine/mrri/mrri.htm). The Institute is part of the Marine Resources Division of the South Carolina Department of Natural Resources. Institute staff interact routinely and extensively with staff at other educational and research facilities in the Fort Johnson complex, including The University of Charleston's Grice Marine Laboratory, NOAA's Center for Coastal Environmental Health and Biomolecular Research, the National Institute of Standards and Technology, the Medical University of South Carolina's Marine Biomedical Program, and the Hollings Marine Laboratory. The successful applicant may apply for an adjunct faculty appointment in the Graduate Program in Marine Biology at the University of Charleston. The Southeastern Regional Taxonomic Center is being established to provide a regional focus for developing taxonomic expertise and skills, and the infrastructure to support the taxonomic endeavors of the scientific community in the southeastern United States. The Center will serve as a training facility, a specimen repository, and a venue for a taxonomic library and searchable database of catalogued specimens and taxonomic literature. The primary goal of the Center is to become a locus of information resources that will benefit regional scientists, students, regulators, private

businesses and the public. A more detailed explanation of the initial objectives of the Center and a description of the facilities at Fort Johnson is available at

http://water3.dnr.state.sc.us/dnr/marine/img/sertc_scope_of_work.pdf

Job Description and Duties:
Under supervision of the Principal Investigator, the successful applicant will direct the daily operations of the Southeastern Regional Taxonomic Center and oversee systematic components of the SERTC, in conjunction with other staff and outside subcontractors. The employee will coordinate activities of the Center to ensure the completion of project objectives, manage project expenditures, assist in development of taxonomic programs, prepare reports on project accomplishments, and develop funding proposals for the SERTC. The employee will participate in education and outreach activities, serve as the Center's contact for visiting scientists, and supervise training of curatorial assistants or student research assistants. The employee will represent the Center and promote its activities among staff of institutions, universities, and museums throughout the region.

In addition to project management duties, the employee will conduct and supervise routine collection management and curatorial duties, including the acquisition, identification, and care of specimens; maintenance of a database of catalogued specimens; tracking of loaned material; and development of a taxonomic reprint collection and literature database. Taxonomic or systematic research and publication is expected to constitute approximately 15-20% of the employee's assigned duties.

Qualifications and Experience:
A PhD in marine biology or related field, with expertise in marine or estuarine invertebrate systematics and taxonomy, is required. Familiarity with the fauna of the western north Atlantic and Gulf of Mexico is preferred, as is an emphasis on taxonomic skill with one or more of the following taxa: annelids, mollusks, echinoderms, or crustaceans (however, candidates specializing in other marine or estuarine taxa from other geographic regions are also encouraged to apply). The candidate must possess and maintain a record of peer-reviewed scientific publication. One to three years of post-doctoral employment in taxonomic research and/or biological collection curation and management is desired, along with some knowledge of bioinformatics. Previous employment should demonstrate a high level of interpersonal and supervisory skills, sound professional judgement, good written and oral communication skills, and the ability to cooperate with other scientists and technical staff. Computer skills should include familiarity with PC-based computers and Microsoft Office software (particularly MS ACCESS), collection management software, statistical and scientific graphing software, and standard Internet browsing and email management software. Some familiarity with web-page development is desirable. The candidate must be able to qualify to receive a SC driver's license, and should be able to operate an outboard motorboat, including trailer transport, for field collection activities. Fluency in English is a requirement.

Benefits:
This is a federally funded (10/1/01 to 9/30/03), full-time position. It is a temporary grant position, and employment beyond the stated grant period is contingent upon satisfactory performance and future funding approval.

Salary range is $35-45K, depending upon level of qualification and experience. Benefits include health and dental insurance and the option to participate in the SC State Retirement System and deferred compensation plans.

Anticipated Starting Date:
Contingent upon receipt of suitable applications, the position will be filled as soon as possible, but no later than July 31, 2002.

To Apply:
For full consideration, the items listed below should be submitted to the following address no later than May 31, 2002:

Office of Human Resources
South Carolina Department of Natural Resources
P.O. Box 12559
Charleston, SC 29422-2559
(843) 762-5021 fax (843) 762-5001

1) a cover letter that includes a statement of research interests and career goals.

2) a Curriculum Vitae

3) three professional letters of recommendation that include current contact information for the sources.

4) a completed State Application: (applications are available online at)

http://www.state.sc.us/jobs/application

Indicate on the application form that the position applied for is the "Assistant Marine Scientist with SERTC" ; do not submit the application by email, rather send it, along with first three listed items, to the above address.

Contact Information:
For additional information regarding application for this position, contact:
Dr. Elizabeth L. Wenner
Marine Resources Research Institute
P.O. Box 12559-2559
Charleston, SC 29422-2559
(843) 762-5050 email
wennere@mrd.dnr.state.sc.us

All applicants must be legally authorized to work in the USA.
The South Carolina Department of Natural Resources is an EEO/AA employer and prohibits discrimination on the basis of race, color, religion, sex, national origin, disability, or age. Direct all inquiries to the Office of Human Resources, P.O. Box 167, Columbia, SC 29202.

Please visit the SCAMIT Website at: http://www.scamit.org

SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers e-mail address

President	Ron Velarde	(619)758-2331	rvelarde@sandiego.gov
Vice-President	Leslie Harris	(213)763-3234	lhharris@bcf.usc.edu
Secretary	Megan Lilly	(619)758-2336	mlilly@sandiego.gov
Treasurer	Ann Dalkey	(310)648-5544	cam@san.ci.la.ca.us

Back issues of the newsletter are available. Prices are as follows:

Volumes 1 - 4 (compilation)..... $ 30.00
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Southern California Association of Marine Invertebrate Taxonomists

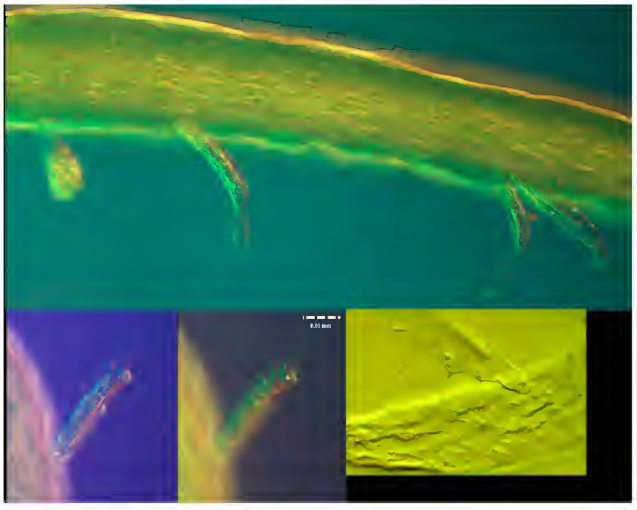
3720 Stephen White Drive
San Pedro, California 90731

April, 2002

SCAMIT Newsletter

Vol. 20, No. 12

SUBJECT:	Ascidians
GUEST SPEAKER:	Megan Lilly
DATE:	17 June 2002
TIME:	9:30 a.m. to 3:30 p. m.
LOCATION:	City of San Diego - Marine Biology Lab 4918 N. Harbor Dr. #201



Gastrotrich?
ITP Regional 2733(2), 17JUL01, 383 ft.
epizoic on *Moorenuphis nebulosa*
From antennae
Image by K. Barwick 7FEB02

Ron Velarde began the April meeting by reminding us that ballots were due at the end of the month. He then quickly reviewed upcoming SCAMIT meetings: May 13, Curatorial Concerns, LACMNH; June 17, Ascidians, CSD; July 15, Photographic and digital imaging for taxonomy and publishing, CSD; August 12, Nereids, LACMNH; September 9, The genus *Epitonium*, CSD.

Larry Lovell had the floor next and told us of a "Species Identification Club" which is being conducted at Scripps. The club meets once a month (approximately), usually on a Wednesday or a Friday, from 3 p.m. to 5 p.m.. It is organized by Bonnie Becker and the focus is mostly on live material collected from rocky bottom habitats. Attendees gather in Ritter Hall, room 229 at Scripps Institute of Oceanography. The next meeting will be Wednesday, June 12 and the topic is crabs. For more information contact Bonnie Becker and bjbecker@ucsd.edu.

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THE ARCO FOUNDATION, CHEVRON, USA, AND TEXACO INC.
SCAMIT Newsletter is not deemed to be valid publication for formal taxonomic purposes.

Lisa Haney (CSDLAC) had the floor next. She informed us that Steve Lowry from the Australian Museum of Natural History had expressed an interest in coming to the Los Angeles County Museum of Natural History and putting together a workshop on the database program Delta. The workshop would probably last five days and would potentially be some time in September. He is inquiring as to the level of interest among SCAMIT members. There have been recent updates to Delta and it is being supported by the Australian Museum of Natural History. Most members present expressed an interest in attending if it were scheduled.

Megan Lilly then briefly announced that she was in the process of having the actual printing and distribution of the newsletter moved from Los Angeles to San Diego. There were some suggestions that SCAMIT look into self-publishing, i.e., buying a computer, printer etc with SCAMIT funds. However, for the moment, we will continue to contract out the printing of the newsletter. There was then a suggestion that SCAMIT create an annual CD each year containing all of that year's newsletters. These would then be available upon request. Cost, etc, would have to be determined.

It was suggested that a 20th anniversary t-shirt would be a great item to have on sale at the upcoming 20th anniversary party on June 1st. Rick Rowe has been working diligently on this process and the t-shirts should be ready in time for the fiesta.

With that, the main topic of the meeting was addressed. Don Cadien first distributed a handout (attached at the end of the NL). He feels that there are four things which need to be considered: 1) what do we get? (2) What can we get? (3) What should we attempt to work with? (4) Are there approaches to data analysis and interpretation that we can apply?

We then delved into all the logistical problems of trying to keep track of parasite occurrences. A database to be shared among the agencies is going to be developed (hopefully) that will standardize our approach and the cataloguing of this information. Don then shared many examples of parasites/commensals that he has found over the years. Discussing, in many cases, their life history and the host(s) with which they associate.

PRIMER WORKSHOP

For those of you who are statistical analysis buffs, there is an upcoming five day workshop that might be of interest. The Primer Workshop will be help from 17-21 June, 2002 at California State University Fullerton. The workshop will focus on the statistical analysis and interpretation of assemblage data from environmental studies. For more information contact Steve Murray at smurray@fullerton.edu.

NEW NEWSLETTER

There is a new newsletter in existence for those of you interested in the taxonomy and systematics of Sipunculans and Echiurans. It is the creation of Dr. Edward Cutler and for further information please email him at ebcutler@earthlink.net

JOB OPPORTUNITY

The Natural History Museum of Los Angeles County invites applications for the position of curatorial assistant. We seek an individual with expertise in crustaceans, mollusks and/or echinoderms for a permanent position in our Marine Biodiversity Processing Center (http://collections.nhm.org). The successful individual will assist with the curation, sorting, databasing, and physical integration of orphan collections into the museum's invertebrate collections.

Applicants should have appropriate degrees in Biology, at least one year of experience with one of the taxonomic groups noted above, and knowledge of contemporary museum collection and specimen conservation techniques. Good oral and written communication skills are essential and experience with collection databasing is desirable.

This position is full-time with full benefits beginning July 1. Salary: $29,700/year plus full benefits.

Review of applications will begin May 31, 2002. Please send your curriculum vitae, name and contact information for three references, and a cover letter that describes your curatorial experience to:

Dr. Angel Valdes
Assistant Curator of Mollusks
Natural History Museum of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007 USA
E-mail: avaldes@nhm.org

Regina Wetzer, Ph.D.
Research and Collections
Natural History Museum of Los Angeles County
900 Exposition Blvd.
Los Angeles, CA 90007
Tel. 213.763.3217
FAX 213.747.0204
rwetzer@nhm.org

Southern California Association of Invertebrate Taxonomists
Treasurer's Summary

Fiscal Year April 1, 2001 – March 31, 2002

SCAMIT began the year with total cash assets of $12,029.76 and ended the year with total cash assets of $10,696.30, a decrease of $1333.36. Income from dues ($1425.00), miscellaneous items (SCAMIT mugs $22.00), and interest ($311.88) totaled $1758.88, but with the payment by SCCWRP for Bight'98 euclymenid and lumbrinerid polychaete identifications, made for a grand total income of $7,946.38.

Highlighting the year were publication of SCAMIT's Fourth Edition of the Taxonomic Listing of Soft Bottom Macro- and Megainvertebrates ($1395.99); final delivery of identifications, keys, and voucher sheets for the euclymenid and lumbrinerid polychaetes generated by Larry Lovell as part of his contract with SCAMIT to perform the Bight'98 identifications ($6187.50); and two workshops featuring Eugene Coan for molluscs, and John Chapman for amphipods ($154.50 and $230.00, respectively). Expenditures for publishing the newsletter totaled $1515.50 for the hard copy and $149.70 for the electronic versions for website maintenance. Member Jay Shrake is SCAMIT's webmaster and provides his outstanding service gratis.

Although the overall spending is in a deficit, members can take comfort in the fact that SCAMIT is producing good taxonomic products for which the monies are dedicated. Having the Fourth Edition of the Taxonomic Listing published and continued quality taxonomic workshops places SCAMIT in a good position to pursue new funding when the time comes.

A PARASITIC HANDOUT BY DON CADIEN (CSDLAC)

WHY WE SHOULD CARE

Monitoring permits have language requiring evaluation of the health of the community in terms of parasites, disease, and anomalies - at least for trawl analyses. While agencies often have fairly well established patterns of reportage of fin rot, ambicoloration, neoplasms, pseudotumors, and other conditions of fish, symbionts of fish and macroinvertebrates are often unreported. These animals, by either their presence or absence, can convey information on the health of the marine environment, and deserve greater attention. This is the first of what is likely to be a string of meetings to consider the inter-organism relationships in our monitoring programs.

BACK TO THE BOOKS

In preparation for this meeting it may be beneficial to revisit some of our basic biological training on the interactions between species. In re-reading the portions dealing with symbioses in several texts I found differing definitions and degrees of appreciation of these interactions between authors. Paul Colinvaux, for instance, stated that symbiosis and commensalism were virtually synonymous; a concept at variance with those presented below. A more widely held, and appropriate view, is that of Bob Ricklefs who states in several texts that parasitism is only a special case of predator-prey interaction, a suggestion supported by the definition of parasitism offered below.

The traditional basis of distinguishing between predation and parasitism is one of scale. Predator-prey relations have been understood to involve a larger species attacking a smaller. Parasitism is usually understood as just the opposite, a smaller species (often <u>much</u> smaller) attacking a larger. This relatively clear differentiation becomes muddy when the eater and the eaten are of similar size, or when small animals act cooperatively as pack hunters. This is a clearly predatory activity, although the predator may only be a fraction of the size of the prey. Perhaps a more useful conceptual difference is between predation, which nearly always results in the death of the prey, and parasitism, which very seldom results in the death of the parasitized. Once again there are complications. Is a death from influenza a result of predation in the aggregate by the virus, or is it just a situation of poorly adapted parasitism?

And what of grazing? Mobile invertebrates which graze on sessile invertebrates are not typically viewed as predators, especially if the sessile invertebrate is colonial or has indeterminate growth (such as a sponge). Removal of some tissue here is usually viewed as equivalent to consumption of a portion of an "animal" such as bivalve siphon-nipping by fishes. While individual hydroid zooids may be totally consumed by grazing sea-slugs, the colony (the "functional individual") survives. This again is a removal of a part rather than a consumption of the whole.

Another variant is the view that mutualist interactions can be either positive or negative. In effect this treats mutualism as a higher level organizing concept, covering both competitive and mutualist relations as listed in the table below.

One might question the idea of neutralism as being an interaction between two organisms when it is defined by lack of effect on both sides. This is a situation in which two organisms occupying either the same or overlapping niches can coexist without influencing one another under normal circumstances. Under unusual conditions, such as a collapse in shared resources, neutralism can change into competition. In others an assessment of a neutral relationship may only reflect lack of knowledge of the ways in which these two co-existing forms interact.

It would be wise to remember during our examinations that these species-species interactions have evolutionary significance, and can be either of ancient or modern inception. Those interactions that stem from long co-evolution between the two participants will differ in effect from those whose recent origin has allowed less time for selection in the species involved. There is actually another and more esoteric class of interactions which involves more than two species. One such occurs locally and involves a crab, its barnacle parasite, and an amphipod egg-predator which affects both.

TYPES OF SYMBIOSES

It is sometimes difficult to establish the nature of the relationship between two organisms. As an aid in that effort I provide the following definitions of types of symbioses:

1 Parasitism - one species benefits, the other suffers
2 commensalism - one species benefits, the other is unaffected
3 competition - both species suffer, not necessarily equally
4 mutualism - both species benefit
5 neutralism - neither species is affected

This can be represented in a table of interactions between species A and species B.

	+	___1__	___2__	___4__
Species A	0	_____	___5__	___2__
	_	___3__	_____	___1__
		_	0	+

Species B

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SCAMIT OFFICERS:

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Vice-President	Leslie Harris	(213)763-3234	lhharris@bcf.usc.edu
Secretary	Megan Lilly	(619)758-2336	mlilly@sandiego.gov
Treasurer	Ann Dalkey	(310)648-5544	cam@san.ci.la.ca.us

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